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A SCIENTIFIC QUARTERLY DEALING WITH EXTRASENSORY PERCEPTION, THE PSYCHOKINETIC EFFECT, AND RELATED TOPICS

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The Journal *of* Parapsychology

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EDITORIAL

THE SHIFTING SCENE IN PARAPSYCHOLOGY

THE FIELD of inquiry we call parapsychology is far from being a fixed and settled one. In spite of the fact that its history is comparatively short, that history has been—and to a marked degree still is—one of transition. This seems to be true whether we consider the problems, the methods, or the meanings attached to this branch of investigation. And yet in a very real sense parapsychology has remained the same field throughout; with all its many changes it has never lost its fundamental and distinctive character. Nevertheless it is wise for us to pause from time to time to adjust our perspective and accommodate the new shift of scenery to the more permanent background of the science.

Perhaps the transition in parapsychology has been most conspicuous in the area of its problems. During the first quarter of the century, attention was given almost entirely to the problems of telepathy, spirit communication, "psychometry," and physical manifestations of mediumship (such as materializations, levitations, spirit photography, parafin gloves, and the like). Today scientific interest in parapsychology is focused almost entirely on the study of extrasensory perception and psychokinesis, grouped together as psi phenomena. There is nothing to indicate that the other problems have been dismissed from consideration; it is more a question of following the problems for which a reliable method of attack is available. The solution of the problem of spirit survival, which was for a long

time the paramount issue in parapsychology, has proved to be beyond the reach of the present methods. A fair amount of progress has been made on the development of methods needed for this problem, but there are other researches that will have to be carried out on the nature of personality before any crucial test of incorporeal personal agency can be designed. A crucial experiment cannot be planned to deal with a hypothetical entity such as a spirit without first establishing the reality of the entity and discovering enough about its true properties and characteristics to provide a basis for discriminating experimental tests. Efforts in the past at identifying spirit agency have been based upon unconfirmed beliefs regarding spirits and their nature; these beliefs have not proved to be a good foundation.

Even telepathy in its original meaning of the direct communication of mind to mind appears, as Thouless and Wiesner have outlined the alternatives,[1] to be beyond our present capacity to identify by test. We cannot say whether or not there is telepathy from mind to mind without bodily intermediation; all the evidence on which the case has so far been built can be accounted for by other types of extrasensory perception. The work done on telepathy has to be regarded as undifferentiated or general ESP (GESP). So far as we know, there are no pure telepathy tests being conducted today; and as the matter now stands, none will be carried out until a new method is invented to exclude alternative types of ESP.

Likewise the problems have shifted in the area of physical manifestations in parapsychology. The claimants of the more spectacular effects of this sort no longer venture out of their relative seclusion in spiritualist camps to demonstrate for scientific observers, and anything like a controlled study of the claims that emanate from such centers would seem to be very difficult of accomplishment. The only physical effects described in the research field today are those dealt with in tests of psychokinesis; and however related these may be theoretically, they seem to be of a quite different order of magnitude from the phenomena identified with persons known as "physical mediums."

A number of the problem phenomena of the earlier period, such

[1] "Psi Processes in Normal and 'Paranormal' Psychology," *J. of Parapsychology*, June, 1950.

as "psychometry," dowsing, and other automatisms are gradually being brought under more careful study by the adaptation of methods developed for the laboratory tests of psi phenomena. These shifts are, in fact, a part of the current transition, and while much of the startling quality of the earlier claims is gone from the new statistical findings, the change represents an advance.

During the last two decades especially there has been an equally marked forward move from the mere search for evidence of psi occurrences on to the investigation of their nature. This new emphasis on the discovery of underlying principles has to do first of all with a number of interrelations between the psi processes themselves under study. But equally prominent are the studies on the place of psi in the personality scheme of the individual, its relation to the physical stimulus and the physical conditions of the test, and also its foundation in the larger system of biology. This transfer of interest to the deeper level problems follows naturally enough upon the establishment of the occurrence of psi phenomena and is a sign of healthy growth.

There is another way of looking at the difference in the problems under investigation. The problems of parapsychology are viewed no longer in terms of the original cultural practice that initiated them, as for example fortune-telling, dowsing, and mediumship. They are regarded now in terms of a generalized problem-definition for the field of parapsychology. That branch of science has become recognized as the study of whatever there is in the realm of personality that transcends physical explanation. The arrival at this unifying and defining concept for the field has furnished parapsychology with an orientation and identification which it formerly lacked. The boundary lines of the field, too, became clearer.

* * * * *

The methods used in parapsychology have likewise undergone sweeping changes. Formerly the great problem of methods had been one of excluding deception and other kinds of error, conscious and unconscious. Today the emphasis has shifted to quite a new set of experimental controls. The primary concern of the present day is that of excluding other manifestations of psi ability not wanted in the effect to be measured. For example, in tests for pure telep-

athy the problem is to exclude clairvoyance. In testing for PK we need adequate controls against the possibility that precognition may effect the results, and vice versa. It can be said that the methodological problems have not become easier through the years, but such is the usual course of a science.

We are hardly less preoccupied today with a second problem of method, that of discovering how to induce the subject to give the best performance of which he is capable. The methods needed here are psychological, of course, and it has been increasingly recognized that the experimenter's skill in the handling of his subject has a great deal to do with the results he will obtain. The shift of interest has come about in part as a result of going to the general population for subjects for psi experiments, in contrast to the earlier way of looking for the rare individual possessing unusual psi ability.

Still another shift of method brings back into the focus of interest the original spontaneous psi experiences that figured heavily in the work of the '80's and '90's and helped initiate the experimental work on telepathy. Once used as a basis of evidence, these case reports became discredited because of the limited reliability of all anecdotal material, and for a considerable period this spontaneous material was neglected. Today, however, there is renewed appreciation of the role spontaneous experiences can play in alerting the experimenter to the way the capacity he is studying actually operates in nature. If the case studies are taken as merely suggestive at best and in no sense relied upon for evidential value, they can furnish new hypotheses for the research worker that he might otherwise never obtain from any other source. They help to keep the scope of our raw materials in front of us and to correct the limitations that are inherent in pure experimentation.

One of the outstanding products of the last twenty years in parapsychology is the battery of test procedures we now have. The extent of this growth may be seen from the two books on test methods which have appeared in that time, the first by Stuart and Pratt and the second by Humphrey. Naturally the development of these instruments of inquiry has brought a larger area of problems under conquest. At present one may see in operation the extension of these tools of research and their penetration into new and hitherto

unexplored territories. Examples may be found in the adaptation of the ESP methods to the appraisal of the free verbal material, such as is characteristic of mediumship and "psychometry," and in the expansion of PK techniques to cope with claims of the direct influence of thought upon the growth and movement of organisms.

Another conspicuous development of recent years is the enrichment of evaluative methods by the adaptation of new statistical devices to the interpretation of test data in parapsychology. Another is the introduction of the methods of comparative study that have been developed in general psychology in the investigation of the personality correlates of psi performance. There is promise of a beginning also in the study of physiological, and more especially neurological, correlates of ESP response. We can see still farther ahead now prospects of biological inquiries concerning the place of psi in the nature and evolution of the living organism. This movement will involve more work on the experimental study of psi in animals.

No review of methods for this period would be complete without mention of the new theoretical synthesis of experimental findings. This integration of separate elements, which is exemplified in the treatment by Thouless and Wiesner already referred to, represents a very important function of the research. Fitting the various isolated parts together in proper relation to each other and placing them accurately in the total scheme of personality is no less a matter of method than, for example, the procedure of the card test.

* * * * *

Finally the significance of the research in parapsychology has shifted, too. It might be better to say that it has spread and grown instead of shifted; it has hardly lost any meaning which it ever had in spite of all the transition in regard to problems and methods reviewed above. At least we may say with confidence that the great purpose of the founders of our science has to a great and reasonable extent been achieved in what has already been done. They set out to find what basis, if any, there is for a spiritual and idealistic—as opposed to materialistic—conception of human nature. Their ideal was plainly a religious one with, of course, a closely associated moral objective.

There is, today, at least no less appreciation of the bearing of psi phenomena on the philosophy of religion than there was in their day, even though such appreciation is still shamefully little. What is noteworthy, however, is the growing recognition of the significance of psi phenomena for a wide range of bordering areas of scientific and professional interest. Most progressive in this recognition is the profession of psychiatry which has had more liaison with parapsychology than any other, and has been bolder in its attention to it. There is, in fact, ample indication that psychiatry, with which parapsychology has no more than a long frontier in common, is taking the findings of parapsychology more seriously than is the profession of psychology itself, to which the problems of psi phenomena more especially belong. We may recall here that of the seven hundred and twenty-three replies received by Dr. MacRobert to the questionnaire he sent to American psychiatrists there were sixty-eight percent in favor of having psychiatrists sponsor research in ESP.

The meaningfulness of the psi discoveries is of course trickling through into other sciences as well. In biology it is raising questions in a good many minds regarding the possible bearing of psi on the unexplained phenomena of evolution, homing and migration, and some other still more general problems such as that of organizational function. Biologists have indeed been trying for an amazingly long time to find a strictly physicalistic explanation for some things that, more than merely on the surface, would appear to be explainable by psi principles.

In the past decade too, there has been considerable interest on the part of physicists, and this has not been merely their interest as open-minded scientists; it derives rather from their professional capacity. It is more particularly the findings of the PK work to which their attention has turned. There is no less interest by the physicist in psi phenomena because the latter show no reliable relation to the familiar physical criteria of space, time, and mass. It is fortunate that some physicists regard a psychophysical process as no less the concern of the physicist than of the psychologist.

There is some initial recognition, small though it may be, that in its refutation of materialism parapsychology has rendered its

service to a broad range of fields dealing with human relations. Without attempting to review here the interconnecting thought and argument, we can say that it has been made reasonably clear that no department of human affairs which depends upon some conception as to the nature of man can go unaffected by findings that so profoundly concern what we think a man really is. In fact all the interoperations of man with man, ranging all the way from the individual relation involved in psychotherapy and education to the mass relations of government, must reckon with the question whether the concept of man which parapsychology is supporting is right.

Whether these wider ranges of significance will ever be appreciated by more than a few or how long this will take if it does happen, we cannot say; but even the initiation of such thinking represents in itself a welcome shift in the general significance attaching to the psi researches. Their meaning in relation to the larger social scene has been brought out; it is no longer confined to the philosophy of religion. In spreading, even though slowly and in faintest trickles, to these wider areas of interest and application, it has broken a confinement that was stifling. Indeed it has been in great part a lack of appreciation of its larger significance for society that has made parapsychology languish so long in isolation and neglect.

J. B. R.

AGENTS IN OPPOSITION AND CONJUNCTION

By S. G. Soal and F. Bateman

ABSTRACT: Dr. Soal and Mr. Bateman carried out 18 ESP test sessions with their subject, Mrs. Stewart. In these tests the subject tried to call cards which were being singled out by one or more senders in another room. The purpose of the experiments was to throw light upon the role played by the sender, or agent, in Mrs. Stewart's ESP performance. The results indicate that the subject does not pick up her impressions indiscriminately from the different senders who may be taking part in the test.

In one set of tests she obtained significantly high scores when there was only one sender. When another sender was placed in opposition (that is, when the procedure was planned so that he was always singling out a different symbol from the one being indicated by the first sender) the subject continued to get high scores with the original sender and made only "chance" scores with the sender in opposition. In another series two or three senders worked part of the time in conjunction (that is, they all thought of the same symbol on each trial) and part of the time in opposition. The results indicate that Mrs. Stewart subconsciously chooses one of the senders in the opposition trials and continues to respond to that sender exclusively during the conjunction trials. There seems to be no evidence that senders in conjunction give better scores than one sender alone.

Dr. Soal is already known to Journal readers. This is Mr. Bateman's first appearance in the Journal, though he and Dr. Soal have published other work in collaboration elsewhere. He is a professional mathematician who holds the position of Assistant Director (Mathematics) on the British Civil Service Commission.—Ed.

In the present paper we discuss such questions as the following: What happens when two agents focus at the same time on different card diagrams? Does the percipient, Mrs. Stewart, pick up now an image from one agent and now an image from the other? Or does she ignore one of the agents and receive only the thoughts of the other? And in the case of the latter alternative what determines her choice of one agent in preference to the other?

Again, when two or more agents focus at each trial on the *same* card symbol are the results in general any better than in the case when only one of the agents focuses on the symbol? We have no cut and dried answers to these questions and such tentative conclusions as we have been able to draw can clearly apply only to the case of Mrs. Stewart, and it is possible that different findings might be reached in work with other subjects.

The experiments are really a continuation of an experiment which Mrs. K. M. Goldney and S. G. Soal carried out with Mr. Basil

Shackleton (3). The time of the former experiment was May 23, 1941, and the two agents were Miss R. E. and Mrs. G. A. with each of whom Shackleton had scored significantly above chance previous to this date. For the first 200 trials on May 23, R.E. was the sole agent, Mrs. G. A. sitting where she could not see the cards. Shackleton, who had been told that R.E. was agent, scored 61 precognitive (+1) hits in 192 trials (that is, 61/192), which is the equivalent of 4.03 standard deviations.

It was arranged that for the next 150 trials G.A. and R.E. should work in "opposition" to each other so that at each trial they were looking at *different* cards. This arrangement was unknown to Shackleton, who was in the other room. He was merely told that from now on G.A. would be the agent. He did not know that R.E. would be sitting at a small table a few feet behind G.A. from where she could see the aperture in a screen which was part of the experimental set-up. From this position R.E. and G.A. could see the random numbers that were held up to the aperture by S. G. Soal, who was seated on the opposite side of the screen. Both agents had before them five cards, each of the five bearing the picture of a different animal, and the agents were provided with conflicting codes according to which they arranged their cards. Thus if R.E. had her cards in the order P E Z G L, those of G.A. might be L G P Z E so that when, say, the number 3 was shown at the screen by S.G.S., R.E. would lift and look at the picture of a *Zebra* while G.A. would look at the picture of a *Pelican*.

The result was that with G.A., the agent to whom his attention had been directed and whom he imagined to be the sole agent, Shackleton scored 57/144 precognitive (+1) hits, giving a critical ratio of 5.45; while with R.E. his score was only 25/144 (+1) hits, which is clearly a chance result (CR<1).

Clearly, in this case, Shackleton made contact with the person whom he thought was the agent and apparently ignored the other person who was operating unknown to him. The actual scores for the six runs of 25 bring this out very clearly.

Thus we find for (+1) scores:

Agent	*Sheet No.*					
	5a	5b	6a	6b	7a	7b
Mrs. G. A.	8	10	11	10	10	8
R.E.	4	3	4	3	5	6

All R.E.'s scores are chance scores and there is absolutely no reason to suppose that Shackleton was even occasionally in contact with R.E.'s mind.

General Lay-Out of the Experiments

This, then, was the background for our new experiment, but before describing the latter in detail it will be advisable to give a brief general account of our method of conducting the work with Mrs. Stewart. All the experiments of the present series were held at 18 Marchmont Road, Richmond, Surrey, which is Mrs. Stewart's home. Three rooms on the ground floor were available: a very large lounge, a fairly large hall, and a fair-sized kitchen (or dining room). Two doors opened into the large lounge, one from the kitchen and the other from the hall. In most experiments Mrs. Stewart, the percipient, who will be designated as (P), sat at a table in the kitchen with an experimenter, called (EP), who watched her as she wrote down her guesses. Very occasionally she sat alone when no (EP) was available. On two or three occasions only, (P) sat in the hall, though during the present series she was always in the kitchen. The agent, or agents, and a second experimenter, called (EA), sat in the lounge with the screen and cards. The screen, which was three feet square and had a three-inch square hole in its center, stood on a small table. On the side of the screen remote from the wall which divided kitchen and lounge sat the agent (A), and on the table in front of him was a cardboard box placed on its side so that the open end faced him. On the floor of the box were five lexicon cards from the same pack, which bore on their faces the initial letters of the names of five animals. In the experiments previous to November, 1947, these letters were P = Pelican; E = Elephant; G = Giraffe; Z = Zebra; L = Lion. But in the autumn of 1947 Mrs. Stewart's scoring was at chance level for several weeks and an examination of her guesses showed that she was repeating mechanically such combinations as P E G, L E G, etc. Accordingly the symbols were changed to H = Horse; K = Kangaroo; T = Tiger; C = Camel; F = Fox, as the absence of a vowel would not permit the formation of words and syllables. This change was accompanied by a rapid improvement of the score and the new symbols have been in use ever since.

On the side of the screen nearest to the kitchen wall sat (EA) with five postcards in front of him on which were printed in heavy type the digits 1 to 5, and the cards were printed for convenience on both sides. The screen itself has occupied three different positions since the year 1945, being sometimes in the center of the room and at other times close to the outer wall, but in all positions Mrs. Stewart, from where she sat, could not have seen it or (EA) or (A) even had the door between the two rooms been wide open. Actually this door was left an inch or two ajar to facilitate hearing.

A third person, called the Time Keeper (TK), was also often present in the lounge sitting on a settee from which he or she could not possibly see the agent's cards. He noted with a stop-watch the time taken for each 25 calls and this was recorded by (EA) at the foot of the column on the scoring sheet. On many occasions (EP) acted also as (TK) and less frequently this function was assumed by (EA).

In the present experiments, in which two or three agents were employed, one agent sat on the far side of the screen with his five cards in the box, and he is usually referred to as the "screen agent." The second agent sat with his five cards either on the settee or at a low table usually on the same side of the screen as (EA) from which he could see the random digits held up by (EA) to the hole in the screen. When two agents were employed in addition to the screen agent, care was taken to place them so that they could not normally see each other's cards. If there was any danger of this some opaque obstacle was placed between them.

S.G.S. seldom took the role of (EP) for reasons which will be explained. The function of this experimenter as originally conceived was to ensure that Mrs. Stewart did not get out of step with the serial calls made by (EA) and to make observations on the guessing, etc. But it soon became evident that Mrs. Stewart expected (EP) to banter, cajole, and amuse her while she was making her guesses, and S.G.S. felt that he was ill-adapted for this role. He felt that Mr. Bateman, Mr. Rozelaar, or Dr. Brendel were much better versed in this art than he himself could ever hope to be; so the office of (EP) was usually relegated to one of these assistants.

During the autumn of 1949 we actually made some experiments

to test whether (P) scored at a significantly higher rate while she was being cajoled, bantered, and amused than when the experimenter (EP) preserved a grim silence.

Sheets of fifty guesses during which (P) and (EP) were allowed to laugh and talk as much as they pleased were rigidly alternated with sheets of fifty during which (EP) kept silent and (P) was confined to calling the word "Right" after each guess. At least three very fluent and entertaining conversationalists were brought into action but the results were disappointing. In the "silent" series Mrs. Stewart scored 268/1000 on the "actual" or (0) cards, the ones which the agent was touching at the instant the subject made her calls, and in the "conversation" series she scored 279/1000. Both scores were highly significant but there is no real difference between the two rates of scoring. But the experiment itself appears to us now to have been a piece of academic nonsense. Because Mrs. Stewart had been amused for about 2½ minutes we need not suppose that her spiritual mercury would fall to zero during the succeeding 2½ minutes of silence. She was probably still enjoying the jokes of the last period or looking forward to the next.

What the experiment does seem to show, however, is that conversation does not interfere with the working of her ESP faculty, but this was only to be expected since (P) makes no effort at concentration during her guessing. Like Shackleton she writes down the letters almost automatically without waiting for any visual image to enter her mind.

It is quite possible, however, that this badinage and laughter has contributed materially to the opening-up of the founts of ESP within her. We have always insisted that the agent should preserve absolute silence during the experiment, but there seems no reason at all why (P) and (EP) should not laugh and talk provided of course that (P) can continue to keep in step with (EA).

The Conduct of the Experiments

With very rare exceptions exactly 400 calls are made at each experiment. The scoring sheets used are almost identical with those of the Shackleton experiments. Each sheet provides space for two columns of 25 guesses, the lefthand column being known as the (a) column and that on the right as the (b) column. Each column is

divided into two sets of 25 cells, the lefthand set (G) for the subject's guesses and the righthand set (A) for the actual card presentations. Before an experiment the (A) columns of eight sheets are filled in by S.G.S. with a random series of the digits 1 to 5, these being selected from tables of random numbers or from tables of seven-figure logarithms as described in our report on the Shackleton experiments. These sheets are kept by S.G.S. in his case until just before the experiment begins.

The first half-hour of each sitting is usually devoted to conversation of a general kind having no connection with the experiment, and to this practice we attach considerable importance. When all is ready (P) is handed eight empty scoring sheets and five cards on which the animals' names are printed as reminders of the range of choices. Then she goes with (EP) into the kitchen. (EA), (TK), and the agent or agents having seated themselves, the agent (if there is only one) shuffles his five cards with eyes shut and lays them face *upwards* in a row on the floor of the box. (TK) starts his stop watch immediately and (A) is told to start looking at his cards. He makes no attempt to remember the order, though it often happens that he does remember it. When thirty seconds are up (TK) calls: "Turn over" and (A) turns the five cards face downwards without, of course, disturbing the order. (EA) then announces to Mrs. Stewart the names of the agents and the nature of the experiment unless this is to be kept secret. For instance, she may be told: "For Sheets 1-4 Mr. W. and Mrs. H. will be in opposition (or conjunction, as the case may be)."

If there are two agents working in conjunction the screen agent first shuffles and lays out his cards and the second agent then arranges his cards in the same order. If the agents are in opposition they are provided each with a small card on which are written four arrangements of the five letters. Each agent is told to arrange his cards for each sheet of trials according to one of the four orders shown on his code card. These arrangements are such as to produce conflicting codes in whichever order the agents choose their arrangements. As each arrangement is used, it is crossed off the code card.

Thus the arrangements might be as follows:

SCREEN AGENT					SECOND AGENT				
L	P	E	G	Z	P	E	G	Z	L
G	P	L	E	Z	Z	E	P	L	G
L	Z	E	G	P	P	G	Z	L	E
G	Z	L	E	P	Z	G	P	L	E

(EA) now calls: "Sheet No. 1." He looks at the first entry in the (a) column of the sheet, presents the corresponding random number at the aperture in the screen, pauses from one-half to one second, and calls aloud the serial number "one." On seeing the random number at the screen the agent or agents touch the back of the corresponding card in the row counting from left to right. The card is not lifted or looked at as in the earlier experiments with Shackleton. On hearing the serial number "one" (P) writes down one of the five letters in the first cell under G in the (a) column of her scoring sheet and immediately calls: "Right." (EA) then presents the next random number at the hole in the screen, pauses again, and calls the serial number "two." (A) touches the appropriate card and (P) writes down her letter in the second cell of her sheet and calls: "Right." And so the experiment proceeds until the first column of 25 guesses is complete. There is then a pause of a few seconds during which (TK) calls aloud the time taken for the 25 guesses. All the experiments in the present series were done at "normal rate," which means that the time for a column lies between 48 and 75 seconds as extreme limits. But the average time is about 58 seconds. This procedure is called T TN (30) which means: telepathy; touch; normal rate of calling; 30-second exposure to the agent's gaze before each sheet.

Having recorded the time (EA) calls out: "Second column," and the experiment proceeds as before. At the end of 50 calls (EA) takes his sheet to the other side of the screen and (A) turns his five cards face upward. (EA) records the "code" on the scoring sheet thus: P G Z E L and this record is checked by the agent.
1 2 3 4 5
(EA) then goes to the second agent and records his code in the same way lower down on the scoring sheet.

At the end of each sheet the screen agent reshuffles his cards and, in a "conjunction" experiment, the other agents arrange their cards

to agree with those of the screen agent. In the case of an "opposition" experiment the agents choose a new arrangement from their cards.

When the first four sheets have been completed there is usually a change in the experiment and Mrs. Stewart is (as a rule) told the nature of this change before starting on Sheets 5-8.

At the close of Sheet 8 (EP) brings the eight sheets of guesses into the lounge. By means of the code or codes on each random number sheet the subject's guesses of animal names are decoded into numbers 1-5 and entered in ink in the appropriate G-column of the random number sheet. In decoding an experiment with two or more agents in opposition the screen agent's code is applied first, the other codes being covered by a piece of paper so as to prevent confusion. The decoded numbers for the screen agent are entered usually on the lefthand side of the G-column and those for agents 2 and 3 on the right of the screen agent's record, but not all decoders have followed this plan. Three and sometimes four persons take part in or watch the decoding; usually these are two experimenters and one or two agents. Ticks are placed opposite correct hits on the target card and the total score is written over the top of each column—that for the screen agent being above the score for agent No. 2 and so on.

If F. Bateman is present he takes the sheets home and not only rechecks all hits on the target card but in addition counts and records the displacement hits as far as (± 2). These are recorded as shown below.

	(a)	(b)
Screen Agent	3/4/8/2/5	2/3/7/1/6
No. 2	1/5/3/7/4	5/4/5/3/6

In each row of five the center number denotes hits on the target card. That just to the *left* of the center is the precognitive ($+1$) score, and that on the extreme left the ($+2$) score, while those on the *right* of the center are postcognitive (-1) and (-2) scores. The sheets are then returned by F.B. to S.G.S., who makes a second recheck. If F.B. is absent S.G.S. takes the sheets home and rechecks only the hits on the target card. S.G.S. then returns the sheets to

F.B., who rechecks hits on the target card and counts displacement hits.

Before the sitting is over notes are written on the scoring sheets of all details of the experiment, the names and functions of the persons present, etc., and all sheets are signed by the two experimenters (EP) and (EA).

In the experiments which follow, it is only the hits on the "target" card (i.e., "direct" hits), which are of any interest.

I. Opposition Experiments

Sitting No. 31. November 18, 1946

Our first experiment with two agents in opposition took place at Sitting 31 on November 18, 1946. Before commencing we told Mrs. Stewart—now in the kitchen—that for Sheets 1-4 there would be two agents, but she was not told that the agents would be in opposition. As the idea of agents in opposition had never been suggested to her, it is very probable that she thought the two agents were seated at the screen looking at the same cards. She knew, however, the names of the two agents, Mr. F. Bateman and Mrs. Y. Hales, and on previous occasions she had scored highly significant results with each of them.

At the end of Sheet 4 Mrs. Stewart was told that Mr. F. Bateman would be the agent for Sheets 5-8, but she was not told that Mrs. Hales would still be working in opposition to him. She would naturally suppose that F. Bateman was to be the sole agent for Sheets 5-8.

The details are as follows:

Sheets 1-4

[Procedure: T 2O TN (30). The addition of the symbol "2O" in this designation indicates "two agents in opposition." (EP) = (TK) = Mr. David Makgil. (EA) = S. G. Soal. Screen Agent = F. Bateman. Opposition Agent = Mrs. Y. Hales. Checking by F. Bateman, S. G. Soal, Y. Hales, and Mrs. J. O. Stewart working together.]

Screen Agent (F. Bateman): Score = 35/200 (chance result)

Opposition Agent (Y. Hales): Score = 54/200 (CR = 2.47)

Neither of these scores is significant, but that of Mrs. Hales is tending toward significance.

Sheets 5-8

[Procedure: T 2O TN (30). General conditions as in Sheets 1-4.]

Screen Agent (F. Bateman): Score = 54/200 (CR = 2.47)
Opposition Agent (Y. Hales): Score = 43/200 (chance result)

It would now appear that any "rapport" made with Mrs. Hales was broken by the suggestion that Bateman was to be the agent in Sheets 5-8. But why did Mrs. Stewart apparently make rapport at the start with Mrs. Hales in preference to Mr. Bateman? Possibly because Mrs. Hales was a much closer friend of Mrs. Stewart.

Sitting No. 32. November 25, 1946.

At sitting No. 32 Mrs. Stewart was told that for Sheets 1-4 Mr. F. Bateman and Mr. L. A. Rozelaar (Queen Mary College) were to be the agents but it was not mentioned that they would work in opposition. (P), however, probably guessed that the agents, as in the experiment of the previous week, would be in opposition. She had on previous occasions obtained highly successful results when working with Mr. Rozelaar alone.

At the end of Sheet 4 (P) was told that for Sheets 5-8 Mr. Rozelaar would be the agent, but it was not mentioned that F. Bateman would still work in opposition to him. It is quite possible, however, that (P) may have guessed that this was indeed the case.

Sheets 1-4

[Procedure: T 2O TN (30). (EP) = (TK) = Mrs. Y. Hales. (EA) = S. G. Soal. Screen Agent = L. A. Rozelaar. Opposition Agent = F. Bateman. Checking by F. Bateman, S. G. Soal, and L. A. Rozelaar.]

Screen Agent (L. A. Rozelaar): Score = 49/200
Opposition Agent (F. Bateman): Score = 42/200

Sheets 5-8

[Procedure: T 2O TN (30). General conditions as in Sheets 1-4.]

Screen Agent (L. A. Rozelaar): Score = 59/200 (CR = 3.36)
Opposition Agent (F. Bateman): Score = 31/200

If we combine the results of Sittings 31 and 32 we have:

Screen Agent: Sheets 1-4: Score = 84/400 (chance result)
Screen Agent: Sheets 5-8: Score = 113/400 (CR = 4.1)
Second Agent: Sheets 1-4: Score = 97/400 (CR = 2.12)
Second Agent: Sheets 5-8: Score = 74/400 (chance result)

What is remarkable is that after (P)'s attention has been oriented by the experimenter toward the screen agent, her score rises from a purely chance score, 84/400, to a highly significant score of 113/400 (CR = 4.1) ($P<4 \times 0.0001 = 0.0004$).

II. Continuity Experiments

We now proceed to describe five experiments which give what is rare in this field—reasonably consistent results. The method was to allow Mrs. Stewart to work for the first 200 guesses with a single agent who was known to her. At the end of Sheet 4 a second agent known to her was brought into opposition with the first agent, and the two agents operated with conflicting codes for the next 200 guesses (Sheets 5-8). Mrs. Stewart was frankly informed that during Sheets 1-4 a named person would be the only agent, and at the end of Sheet 4 she was told that for the next four sheets a second named agent would act in opposition to the first. The first agent sat at the screen during the whole experiment and the second at a small table during Sheets 5-8. From there he could see the random numbers presented by (EA), but not the first agent's cards. As explained in the preceding sections, at every trial during Sheets 5-8 the two agents were focusing on different cards. The general procedure throughout the series was the T TN (30) procedure, but, as noted above, when two agents in opposition use this method (touching the backs of the cards at "normal" speed without lifting them, having previously gazed upon their faces for thirty seconds before starting on the sheet) it is now called a T 2O TN (30) experiment.

The details and results of the five experiments are tabulated below.

Sitting No. 58. October 4, 1948

In this experiment, contrary to usual procedure, the first agent, Mrs. Y. Hales, sat at the screen during Sheets 1-4, but then changed her seat to a small table for Sheets 5-8; whereas the opposition agent, Mrs. S. G. Soal, sat at the screen during Sheets 5-8.

[(EP) = F. Bateman. (EA) = S. G. Soal. No times taken, but rate of calling approximately normal. Each agent given four codes on four slips of paper and asked to use them in any order, but not to use the same code twice. Checking by S. G. Soal, F. Bateman, and Y. Hales.]

Sheets 1-4

Procedure	Target Card Score	CR	First Agent
T TN (30 approx.)	56/200	2.83	Mrs. Y. Hales

Sheets 5-8

Procedure	Target Card Score	CR	First Agent
T 2O TN (30 approx.)	53/200	2.30	Mrs. Y. Hales
			Opposition Agent
	41/200	——	Mrs. S. G. Soal

Sitting No. 62. October 18, 1948

[(EP) = F. Bateman throughout Sheets 1-8. (TK) for Sheets 1-4 = Y. Hales. (TK) for Sheets 5-8 = Mrs. J. O. Stewart. (EA) = S. G. Soal. Checking by F. Bateman, S. G. Soal, and Y. Hales. (P) was told at the start that Mrs. Soal would be the only agent for Sheets 1-4, but after the sitting she told us that she was under the impression that Mrs. Soal and Y. Hales were in opposition the whole time.]

Sheets 1-4

Procedure	Target Card Score	CR	Screen Agent
T TN (30)	47/200	1.24	Mrs. Soal

Sheets 5-8

Procedure	Target Card Score	CR	Screen Agent
T 2O TN (30)	61/200	3.71	Mrs. Soal
			Opposition Agent
	37/200	——	Mrs. Y. Hales

Sitting No. 64. October 25, 1948

[(EP) = F. Bateman throughout Sheets 1-8. (EA) = S. G. Soal. Not timed but approximately at normal rate. Checking by F. Bateman, S. G. Soal, and Y. Hales.]

Sheets 1-4

Procedure	Target Card Score	CR	Screen Agent
T TN (30 approx.)	47/200	1.24	Mrs. Soal

Sheets 5-8

Procedure	Target Card Score	CR	Screen Agent
T 20 TN (30 approx.)	51/200	1.94	Mrs. Soal
			Opposition Agent
	36/200	——	Mrs. Y. Hales

Sitting No. 65. October 29, 1948

[(EP) = L. S. Rozelaar, Sheets 1-8. (TK) = Dr. F. C. L. Brendel (Queen Mary College), Sheets 1-8. (EA) = S. G. Soal. Checking by Dr. H. S. Allen (Queen Mary College), Dr. Brendel, S. G. Soal, and L. A. Rozelaar.]

Sheets 1-4

Procedure	Target Card Score	CR	Screen Agent
T TN (30)	44/200	——	Dr. H. S. Allen

Sheets 5-8

Procedure	Target Card Score	CR	Screen Agent
T 20 TN (30)	56/200	2.83	Dr. H. S. Allen
			Opposition Agent
	42/200	——	Dr. F. C. L. Brendel

Sitting No. 68. December 10, 1948

[(EP) = L. A. Rozelaar throughout. (TK) = Dr. F. C. L. Brendel. (EA) = S. G. Soal. Checking by Dr. Brendel, S. G. Soal, and L. A. Rozelaar.]

Sheets 1-4

Procedure	Target Card Score	CR	Screen Agent
T TN (30)	50/200	1.77	Mrs. Edis[1]

[1] Mrs. Edis rents part of Mrs. Stewart's house.

Sheets 5-8

Procedure	Target Card Score	CR	Screen Agent
T 2O TN (30)	54/200	2.47	Mrs. Edis
			Opposition Agent
	38/200	——	Dr. Brendel

Summing up the results of the five experiments we have the following totals:

Sheets 1-4

Procedure	Target Card Score	CR (First Agents)
T TN (30)	244/1000	3.47

Sheets 5-8

Procedure	Target Card Score	CR (First Agents)
T 2O TN (30)	275/1000	5.9
	194/1000 (chance)	CR (Opposition Agents)

The opposition score is not independent of the first agents' score. For if (P) scores a hit with the first agent she must score a miss with the opposition agent. If, however, (P) scores a miss with the first agent, the probability of her scoring a hit with the opposition agent is 1/4 and not 1/5.

Thus, since the first agents scored 275/1000 hits, the expectation of hits for the opposition agents is $1/4\ (1000 - 275) = 181.25$ with standard deviation $= \sqrt{1/4 \times 3/4 \times 725} = 11.66$. The actual deviation is $194 - 181.25 = +12.75$. Thus the excess is without significance, being just greater than the standard deviation. It will be seen that the scores of the individual agents in opposition are all without significance though we have not given the details in each case.

The upshot of this series seems quite unequivocal. Mrs. Stewart scores significantly when working with the first agents as sole agents and she continues to score significantly with them when a second agent is brought into opposition. There is not the slightest sign that she made any contact whatever with the opposition agents. The rapport established with the first agent apparently causes her to ignore the second agent completely. It should be noted that with every one of these opposition agents Mrs. Stewart had made highly significant scores on some previous occasion when working alone

with the agent; it is not at all a question of the opposition agents being bad agents. All of them in fact are very good agents.

At first sight it might be supposed that (P) was doing even better with the first agents after the opposition agent had been introduced, but the difference between the mean scores per 25 before and after opposition is 6.87 − 6.10 = 0.77, which is not in any way significant. There is, however, a discernible tendency of the first agents to begin rather badly and then jump up in Sheets 5-8.

III. Agents in Conjunction and Opposition

We shall now describe experiments in which two or sometimes three agents were working part of the time in conjunction and the rest of the time in opposition. The conditions of some of these experiments were not so satisfactory as might have been desired, for it was usually impossible to arrange for two *good* agents to attend the same sitting and frequently a poor agent had to be put into conjunction or opposition with a good agent. For this reason the results are not so illuminating as they might otherwise have been. I shall first give details of four experiments in each of which two or three agents worked in opposition for four sheets and in conjunction for the other four sheets. Opposition and conjunction sheets were rigidly alternated.

Sitting No. 92. March 18, 1949

[The agents were Mrs. M. Holding (screen) and Mr. W. Harwood (small table). This was Mr. Harwood's first visit. (EA) = (TK) = S. G. Soal. No (EP) present. Checking by S. G. Soal, Mr. Harwood, and Mrs. Holding. For Sheets 1, 3, 5, 7 the agents were in conjunction. (This procedure is designated as T 2C TN (30), which means: telepathy; two agents in conjunction; touch; normal rate of calling; 30-second exposure to the agent's gaze before each sheet.) For Sheets 2, 4, 6, 8 the agents were in opposition: T 2O TN (30).]

Conjunction Score = 52/200 (CR = 2.12)

Opposition Score: Mrs. Holding = 59/200 (CR = 3.36)
Mr. Harwood = 33/200 (chance result)

Sitting No. 99. April 29, 1949

[The agents were (i) Mr. W. Harwood (screen); (ii) Dr. F. Brendel (small table); (iii) Mrs. M. Holding (second table). Between (ii) and (iii) an opaque screen was placed. (EA) = (TK) = S. G. Soal. No (EP) present. Checking by S. G. Soal, Dr. Brendel, and Mrs. Holding. For Sheets 1, 3, 5, 7 the three agents were in opposition: T 3O TN (30). For Sheets 2, 4, 6, 8 the three agents were in conjunction: T 3C TN (30). Mrs. Stewart was told before each sheet whether the three agents were to be in conjunction or in opposition, but her attention was not directed specifically by the experimental instructions to any particular agent.]

Conjunction Score = 44/200 (chance result)
Opposition Score: Mr. Harwood = 35/200 (chance result)
Dr. Brendel = 61/200 (CR = 3.71)
Mrs. Holding = 38/200 (chance result)

Dr. Brendel's result is highly significant even if selected from the four results ($P<0.0008$). This was Dr. Brendel's first visit after an absence of several months. Mrs. Stewart manifested great delight at his appearance and she had asked S.G.S. on many previous occasions why Dr. Brendel never came to the experiments nowadays. He had in the past made himself very useful in putting up shelves, etc., in the house, as he is an expert woodworker. This pleasurable reaction to his surprise visit may have put Mrs. Stewart in rapport with him to the exclusion of Mrs. Holding, who is ordinarily an excellent agent. What is inexplicable, however, is that this rapport appears to have been broken at every conjunction experiment and resumed again at each opposition sheet. It would almost appear as if the efforts of the two other agents somehow interfered with the rapport between Dr. Brendel and Mrs. Stewart when all three agents were focusing on the *same* symbol.

Sitting No. 101. May 6, 1949

[The agents were (i) Mrs. M. Holding (screen); (ii) Mr. W. Harwood (end of card table). A small screen was placed between the agents. (EA) = (TK) = S. G. Soal. No. (EP) present. Checking by S. G. Soal, Mrs. Holding, and Mr. Harwood. For Sheets 1, 3, 5, 7 the agents were in opposition: T 2O TN (30).

For Sheets 2, 4, 6, 8 the agents were in conjunction: T 2C TN (30). Mrs. Stewart was told before each sheet whether agents were in conjunction or opposition; but her attention was not specifically directed to either of them by the experimental instructions.]

Conjunction Score = 60/200 (CR = 3.54)
Opposition Score: Mrs. Holding = 54/200 (CR = 2.47)
Mr. Harwood = 31/200 (chance result)

The difference between the conjunction score and that of Mrs. Holding is not significant when worked out by Fisher's method of small samples ($0.7>P>0.6$). It is probable that (P) made contact with Mrs. Holding only.

Sitting No. 103. May 13, 1949

[The agents were (i) Mrs. M. Holding (screen); (ii) Mr. Ray Whelan (small table); (iii) Mrs. Ray Whelan (settee). (EA) = (TK) = S. G. Soal. No (EP) present. Mrs. Stewart in kitchen. Checking by S. G. Soal, Mrs. Holding, and Mr. and Mrs. Whelan. For Sheets 1, 3, 5, 7 the three agents were in opposition: T 3O TN (30). For Sheets 2, 4, 6, 8 the three agents were in conjunction: T 3C TN (30). This was the first visit of Mr. and Mrs. Ray Whelan, who are friends of Mrs. Holding. The experimenter told Mrs. Stewart before each sheet who were the agents and whether they were in opposition or conjunction, but her attention was not drawn to any special person.]

Conjunction Score = 53/200 (CR = 2.30)
Opposition Score: Mrs. Holding = 57/200 (CR = 3.01)
Mr. Whelan = 28/200
Mrs. Whelan = 36/200

The difference between the conjunction score and that of Mrs. Holding is not significant ($0.7>P>0.6$). Mr. Whelan subsequently proved himself to be a good agent, but Mrs. Whelan was unsuccessful when tested alone at a later date. It is probable that Mrs. Stewart made rapport only with Mrs. Holding, the established agent.

If for the above four sittings we compare the *highest* opposition score with the conjunction score we have:

Sitting	Highest Opposition Score	Conjunction Score
No. 92	59/200	52/200
No. 99	61/200	44/200
No. 101	54/200	60/200
No. 103	57/200	53/200
Total	231/800 (CR = 6.28)	209/800 (CR = 4.33)

We find that the difference between the totals is not significant ($P \sim 0.16$). It seems probable that having chosen one of the opposition agents Mrs. Stewart continues to work with that agent only during the conjunction experiments. There seems no evidence that putting agents in conjunction improves the score.

This finding is further illustrated by Sitting 94.

Sitting No. 94. March 25, 1949

For Sheets 1-4 Mrs. Y. Hales was the sole agent, but for Sheets 5-8 Mrs. M. Holding was brought into conjunction with Mrs. Hales: T 2C TN (30).

Sheets 1-4

[Procedure: T TN (30). Agent = Mrs. Y. Hales (screen). (EA) = S. G. Soal. (TK) = Mrs. Holding. (EP) = Mr. A. M. Walker.]

(Screen Agent) Score = 63/200 (CR = 4.06)

Sheets 5-8

[Procedure: T 2C TN (30). Agents = Mrs. Hales and Mrs. Holding. (EA) = (TK) = S. G. Soal. No (EP) present. Results checked by Mrs. Holding and S. G. Soal. Rechecked by S. G. Soal and F. Bateman. Mrs. Hales sat at the screen throughout and Mrs. Holding at a small table on the near side of the screen. Mrs. Stewart had been told that for Sheets 1-4 Mrs. Hales would be the sole agent. At the start of Sheet 5 she was told that the agents would be Mrs. Hales and Mrs. Holding in conjunction.]

Conjunction Score = 50/200 (CR = 1.77)

The interest here lies in the fact that we had two excellent agents working together and one of them, Mrs. Holding, coming in fresh at the start of Sheet 5. But there is no improvement in the score

and actually the difference between the two scores is not significant. (P ~ 0.1.)

Sitting No. 96. April 1, 1949

During Sheets 1-4 it was decided to test Mr. W. Harwood working alone with Mrs. Stewart. In Sheets 5-8 he was put into conjunction with the good agent, Mrs. Holding.

Sheets 1-4

[Procedure: T TN (30). Agent = Mr. W. Harwood (screen). (EA) = S. G. Soal. (TK) = Mrs. Holding. (EP) = Mr. Holding (Mrs. Holding's son).]

(Screen Agent) Score = 31/200 (chance result)

Sheets 5-8

[Procedure: T 2C TN (30). Agents = Mr. W. Harwood (small table) and Mrs. Holding (screen) in conjunction. (TK) = Mrs. Y. Hales. (EA) = S. G. Soal. (EP) = Mr. Holding. Mrs. Stewart had been told that Mr. Harwood would be the sole agent during Sheets 1-4. At the start of Sheet 5 she was told that Mr. Harwood and Mrs. Holding would be working in conjunction during Sheets 5-8.]

Conjunction Score = 51/200 (CR = 1.94)

The improvement in the score here is just as significant. (By Fisher's method of small samples P ~ 0.01.) It seems probable that it was due to the introduction of the good agent, Mrs. Holding. Mrs. Stewart probably made no rapport with Mr. Harwood during the sitting. Judging from the results of this test and those of Sittings 92, 99, and 101 it seems likely that Mr. Harwood is a bad agent. Mr. Harwood's total score up to date is 130/800, and this shows a slight negative tendency (CR = − 2.64) which, however, is of no importance as it is selected from a group comprising more than sixty sets of 800.

Sitting No. 90. March 11, 1949

Sheets 1-4 were a distance experiment between Richmond and Cambridge (1).

[The two agents were: (i) Mrs. M. Holding (screen); (ii) Mr.

Leonardi (small table). (TK) = (EA) = S. G. Soal. (EP) = Mr. Alan Stewart. Checking by S. G. Soal and Mr. Alan Stewart working together. For Sheets 5-8, the two agents were in conjunction: T 2C TN (30). For Sheets 9-12, the same agents were in opposition sitting in the same positions: T 2O TN (30). Mrs. Stewart was told before Sheet 5 that the agents would be in conjunction and before Sheet 9 that they would be in opposition.]

Conjunction Score = 54/200 (CR = 2.47)
Opposition Score: Mrs. Holding = 49/200
Mr. Leonardi = 34/200 (chance result)

The difference between the conjunction score and Mrs. Holding's score is not significant (P = 0.5). There is no reason to think that Mr. Leonardi, who was on his first and only visit, contributed any significance to the score in the conjunction experiment.

Sitting No. 105. May 20, 1949

Sheets 1-4

[Procedure: T TN (30). Mr. Ray Whelan was the sole agent and sat at the screen. Mrs. Stewart was told before Sheet 1 that he was the only agent. (EA) = S. G. Soal. (TK) = Mrs. Holding (settee). (EP) = Mr. W. Harwood. Present also was Mrs. Whelan sitting beside Mrs. Holding. Checking throughout by S. G. Soal, Mrs. Holding, Mrs. Whelan.]

(Screen Agent) Score = 55/200 (CR = 2.65)

Sheets 5-8

[Procedure: T 3C TN (30). Three agents were in conjunction: (i) Mr. Whelan (screen); (ii) Mrs. Whelan(settee); (iii) Mrs. Holding (small table). (EA) = (TK) = S. G. Soal. (EP) = Mr. Harwood. Before Sheet 5 Mrs. Stewart was told that the experiment was now a conjunction experiment and was given the names of the three agents.]

Conjunction Score = 48/200

The difference between Mr. Whelan's score and the conjunction score is not significant. (P = 0.38.)

Sitting No. 115. July 8, 1949

[Mrs. Stewart had returned from Antwerp the previous day. The two agents were (i) Mr. Ray Whelan (screen); (ii) Mrs. Ray Whelan (settee). (EA) = (TK) = S. G. Soal. (EP) = Mrs. Holding. Checking by S. G. Soal, Mrs. Holding, Mr. and Mrs. Whelan. For Sheets 1-4 the two agents were in conjunction: T 2C TN (30). In Sheets 5-8 they were in opposition: T 2O TN (30). Before Sheet 1 Mrs. Stewart was told that Mr. and Mrs. Whelan would be in conjunction for Sheets 1-4 and at the end of Sheet 4 she was told the same two agents would be in opposition for Sheets 5-8.]

Conjunction Score = 52/200 (CR = 2.12)
Opposition Score: Mr. Whelan = 49/200
Mrs. Whelan = 37/200

The difference between the conjunction score and Mr. Whelan's score is not significant. It is probable that Mrs. Whelan contributed nothing of significance to the conjunction score. This is confirmed by the results of Sittings 116 and 117.

Sitting No. 116. July 15, 1949

At the start of the experiment Mrs. Stewart, now in the kitchen, was told that Mrs. Whelan would be the agent for Sheets 1-4, but she was not told that Mr. Whelan would be in opposition to Mrs. Whelan, so that she must have thought that Mrs. Whelan was the sole agent. At the end of Sheet 4 Mrs. Stewart, who supposed Mrs. Whelan to have been the sole agent, was told that for Sheets 5-8 Mr. Whelan would be brought into conjunction with Mrs. Whelan.

[(EA) = S. G. Soal. (TK) = Mrs. Holding. (EP) = Mr. W. Harwood. Present also, Mr. Saffery. Checking by S. G. Soal, Mrs. Holding, Mr. and Mrs. Whelan. The two agents were (i) Mrs. Whelan (screen); (ii) Mr. Whelan (small table). For Sheets 1-4 the two agents were in opposition: T 2O TN (30). For Sheets 5-8 they were in conjunction: T 2C TN (30).]

Conjunction Score: 56/200 (CR = 2.83)
Opposition Score: Mrs. Whelan = 41/200 (chance result)
Mr. Whelan = 44/200 (chance result)

The results of this experiment are of considerable interest. It will be seen that in Sheets 1-4, with the agents in opposition, Mrs. Stewart did not succeed in making contact with either of the agents. She presumably failed with Mr. Whelan, who is a good agent, because her conscious attention had not been directed toward him by the experimenters. She did not know he was operating. But why did she fail with Mrs. Whelan also? I think the answer is that Mrs. Whelan is a bad agent. After Mrs. Stewart's attention had been drawn to Mr. Whelan at the end of Sheet 4 the score leaped up to significance. But the results of the next sitting make it improbable that Mrs. Whelan contributed anything of significance to the 56/200 score.

What probably happened, then, is that (P) tried to contact Mrs. Whelan but failed because the latter is a bad agent. As soon as (P)'s attention had been directed to Mr. Whelan she subconsciously oriented herself toward him.

Sitting No. 117. July 22, 1949.

The object of this sitting was to test the hypothesis that Mrs. Whelan is a bad agent.

Sheets 1-4

[Procedure: T TN (30). Sole Agent = Mrs. Whelan (screen). (EA) = S. G. Soal. (TK) = Mr. R. Whelan (settee). (EP) = Mrs. M. Holding. Checking throughout by S. G. Soal, Mrs. Holding, Mr. and Mrs. Whelan.]

Mrs. Stewart, in the kitchen, was told the name of the agent before commencing each series. To give Mrs. Whelan every chance she was allowed to take first turn as agent while (P) was fresh.

(Screen Agent) Score = 39/200 (chance result)

Sheets 5-8

[Agent = Mr. R. Whelan (screen). (TK) = Mrs. Whelan (settee). General conditions same as in Sheets 1-4.]

(Screen Agent) Score = 63/200 (CR = 4.06)

The results clearly show that (1) Mrs. Stewart did not make any contact with Mrs. Whelan; (2) Mr. Whelan is a good agent; and (3) Mrs. Stewart was in excellent form at this sitting. These

findings lend confirmation to our findings on the previous experiment.

This concludes the account of experiments with agents in opposition and conjunction. All experiments of this type carried out up to the date of writing have been described in this paper.

Let us now consider the total results of the ten sittings at which two or more agents were in conjunction for 200 trials out of the 400 trials of each experiment. In seven of these the same agents were in opposition for the remaining 200 trials. However, there were three sittings in which a single agent operated alone without opposition for 200 trials and was brought into conjunction with a second agent for the other 200 trials. For these ten sittings we have: Total Conjunction Score = 520/2000 (CR = 6.71). The sum of the highest opposition scores plus the scores of the single agents = 522/2000. There is practically no difference between the two totals which of course include the cases in which there was rigid alternation of opposition and conjunction conditions as well as those cases where the conditions were not alternated in blocks of 50. All the evidence, then, goes to show that in all probability only the agent who scores significantly in the opposition experiment or the successful single agent plays an essential part in Mrs. Stewart's success in the conjunction experiments.

Discussion

The main effect of all these experiments is to bring us back to something akin to the old notion of "rapport" between agent and subject in a telepathy experiment. When I use the word "rapport" I mean no more than to suggest that Mrs. Stewart (subconsciously) directed her attention exclusively to *one* of the two agents and ignored the others *temporarily*.

When two equally good agents work simultaneously with Mrs. Stewart, we can find no evidence whatsoever which supports the suggestion that she picks up, now an image from one agent and now an image from the other. On the contrary, everything points to the conclusion that she attaches herself temporarily to one agent and ignores the other. This rapport may be determined, for instance, by her being told by the experimenter that A is the agent while she is kept in ignorance that a second person, B, is working in opposition

to A. When Mrs. Stewart actually knows that there are two agents working in opposition she appears to choose one and totally ignore the other. If she has been previously working with A as sole agent the rapport established with A persists even after a second agent, B, equally good, has been put into opposition with A. When no suggestion has been made to her by the experimenter that A is to be preferred to B and C she seems to make her own choice by a kind of autosuggestion. This emerges very clearly in Sitting 99 when three agents, Mr. Harwood, Dr. Brendel, and Mrs. Holding, worked together in opposition and conjunction for alternate blocks of fifty guesses. Normally Mrs. Holding has proved herself to be a better agent than Dr. Brendel, but apparently the emotional reaction to Brendel's surprise visit set up a rapport with him to the entire exclusion of Mrs. Holding. Mrs. Stewart's subconscious mind does not appear to make any rational choice, but blindly obeys the experimenter's suggestion or an autosuggestion.

Merely because the experimenter suggested to (P) that Mrs. Whelan was the agent she tried ineffectually to make contact with this weak agent, entirely ignoring the fact that a good agent, Mr. Whelan, was available. Then when Mr. Whelan's name was mentioned to her she apparently abandoned the futile attempt to contact Mrs. Whelan's thought and established a successful rapport with Mr. Whelan.

These results do not entirely agree with the findings of Whately Carington in his seventh picture-guessing experiment. He says in his book *Thought Transference* (**2**, p. 70): "If several experimenters work concurrently, or substantially so, as in my seventh experiment, subjects are no more likely to hit originals prepared and displayed by their own experimenter than those prepared and displayed by others. The process does not depend on any 'rapport' in the sense in which the term is commonly understood. . . ."

We have the greatest admiration for Carington's work in this field but we cannot help thinking that he sometimes drew conclusions from statistical results of marginal significance. In his efforts to extract the last ounce of information from his data he sometimes overlooked the paramount necessity for repeating an effect over and over again before coming to a conclusion.

In any case, it seems quite clear that Mrs. Stewart does not pick up card images indiscriminately from a number of agents focusing simultaneously on the same or different cards.

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ESP SCORE LEVEL PREDICTED BY A COMBINATION OF MEASURES OF PERSONALITY

By Betty M. Humphrey

ABSTRACT: In a previous issue of this Journal, Dr. Humphrey reported that when subjects were divided into "midrange" and "extreme" groups on the basis of their answers to the Stuart Interest Inventory, there was a significant difference between the ESP scores of the two groups. Later she combined the interest measure with another personality rating, that of expansion-compression, based on qualities in freehand drawings made by the subjects, and it was found that the expansive-midrange subjects scored significantly higher than the compressive-extreme subjects. Now a third measure has been combined with the other two. This third measure is a 14-item interest scale which by itself has been effective in showing that those who were "high" on the scale also scored high in ESP and those who were "low" on the scale scored low in ESP. The results of combining the three personality measures are given in the present report. Dr. Humphrey shows that 38 ESP subjects who were rated as expansive, midrange, and "high" in the corresponding personality measures gave an average ESP score which was above the expected chance average (though not significantly so) and that 90 subjects who were rated compressive, extreme, and "low" gave an average ESP score which was below the chance average to a significant degree. The difference between the two groups was also found to be statistically significant.—Ed.

Several measures of personality have been found effective in separating high-scoring ESP subjects from low-scoring ones. In a recent study two of these measures of personality were used in combination to rate subjects in ESP tests (1). The result was that the combination of personality measures separated the subjects into two groups whose average ESP scores were significantly different. Moreover, the combination of measures was more effective in picking out high and low ESP scorers than was either measure alone.

One of the measures used in the study referred to was based on the Stuart Interest Inventory, which has been described in detail elsewhere (2, 6). On the basis of their responses to items listed in the inventory, subjects are separated into two groups: (1) "midrange" and (2) "extreme." In a study of sixteen available clairvoyance card series, it was found that subjects in the midrange group gave positive ESP scores while those in the extreme group gave ESP scores below mean chance expectation.

The measure of personality which was combined with the midrange-extreme rating was the "expansion-compression" score based on the form quality of freehand drawings. The expansion-compression score is indicative of *how* a subject draws. For example, if a drawing suggests that the subject was imaginative and free in expressing himself, it is classed as "expansive." If, on the other hand, the drawing indicates that the subject was tense, inhibited and unable to express himself freely, it is rated "compressive." The expansion-compression criterion has been quite successful in separating high- and low-scoring subjects in ESP tests based on drawings. In various studies (**4, 5, 7**) it has been found that expansive subjects score positively in clairvoyance drawings tests, while the compressive subjects score below mean chance expectation. But when the expansion-compression measure was applied to the data of the sixteen clairvoyance card experiments mentioned above, the difference in ESP scoring rate between expansives and compressives was not striking (**1**). The expansives gave slightly positive ESP results and the compressives were a little below chance expectation, but the difference was not significant.

The combination of midrange-extreme and expansive-compressive ratings produced a much more striking separation of the high- and low-scoring subjects in the same sixteen clairvoyance card series than either of these personality measures taken alone. Those subjects who received *both* midrange and expansive ratings scored significantly above mean chance expectation. On the other hand, subjects who were rated *both* extreme and compressive gave ESP card scores significantly below chance expectation, and the difference between the groups was highly significant.

Since the combination of measures resulted in increased effectiveness in predicting success and failure in ESP card tests, it was worth while to continue this line of investigation and combine still other measures of personality with those we had already found useful. If a number of factors related to high and low scoring in ESP tests were to be found, we should gain increased knowledge of the personality correlates of ESP by studying the relation of ESP scoring to these factors in combination. Since the study discussed above

was published, a new checking scale for the Stuart Interest Inventory has been devised (3), and it has been found effective in separating high- and low-scoring ESP subjects. The purpose of the present paper is to present the results obtained when this new scale, called the 14-item scale, is combined with the two measures mentioned above: midrange-extreme and expansion-compression. A brief description of the data used, the measures of personality, and the results obtained when each measure alone was used will be given before the results of the combinations of measures are presented.

The ESP Data

In the previous reports on the Stuart Interest Inventory and expansion-compression (1, 2) there was a description of the essential conditions of sixteen available clairvoyance series. Since these same series are involved in the present report, the procedural details, etc., will not be repeated here. Suffice it to say that all tests involved a clairvoyance procedure using ESP cards which were screened from the subjects' view. In all but one series the subjects were tested in groups. Various standard precautions were taken and were described in other reports (2, 5, 7).

The midrange-extreme measure based on the Stuart Interest Inventory and the expansion-compression measure based on drawings were both applied to all of the data in the sixteen series. As will be explained below, however, it was possible to apply the 14-item scale to only thirteen of the series. The first three clairvoyance group series had been used in devising the new scale and could not be used to test its effectiveness.

In the sections immediately following, where a brief description of the measures of personality is presented along with the results obtained from each measure, only the results for the thirteen series will be given. This is done in order that the reader may compare the effectiveness of each measure when applied to the same data. Since the 14-item scale can be applied only to thirteen series, the results for the other measures will be limited to those series also. The figures given for these measures will not of course agree with those in the published reports of the midrange-extreme and expansion-compression measures since the latter give the results for the full sixteen series (1, 2).

Of the thirteen series involved in the present study, six were carried out by Dr. Burke M. Smith, four by Dr. J. B. Rhine, one by Miss Elizabeth McMahan, and two by myself. (In later tables, the letter "S" before the series number indicates Smith, "R" refers to Rhine, "M" to McMahan, and "H" to Humphrey.) Each subject made from one to four runs of 25 ESP trials each. In eight series each subject made two runs each; in four series, four runs; and in one series, only one run each.

The Measures of Personality

Expansion-Compression

Subjects in all series were given ESP drawings tests, in which they attempted to reproduce or identify concealed pictures. In a few series each subject made four drawings, although in most they made only one or two. In series where one or two were made, the drawings were used only as the basis of the expansion-compression rating and were not evaluated for evidence of ESP. In some series subjects made their drawings before taking the card tests, while in others the card runs were given first. In three series a certain number of tests were carried out under one condition and then followed immediately by a comparable number of tests given under a different condition. The expansion-compression rating was made independently for the tests carried out under different conditions. Thus a subject might be rated "expansive" in one test condition and "compressive" in another.

The method of making the ratings will not be given here since it has been described elsewhere (**4**). Ratings were always made by judges who did not know the subjects' ESP scores. For all series except two, the expansion-compression ratings of the subjects were determined by averaging the independent ratings of the late Dr. C. E. Stuart and myself. In the last two Rhine series, I, alone, rated the subjects.

The ESP results for the subjects[1] in the expansive and compressive groups are shown in the following table:

[1] In the three series where independent expansion-compression ratings were made for the different conditions of the experiment, each subject was counted twice since at one time a subject might appear in the expansive group and the next time in the compressive group.

Expansive Subjects				Compressive Subjects			
Number of Subjects	Runs	Dev.	Av. Score	Number of Subjects	Runs	Dev.	Av. Scoer
196	397	+25	5.06	357	732	−28	4.96

Diff. between means = .10

Both the expansives and the compressives scored very close to the expected chance average of 5.00. None of the figures are significant.

Midrange-Extreme Measure

The Stuart Interest Inventory consists of 60 items listing activities, objects, etc., commonly of interest to college students. For each item in the inventory, the subject is asked to write one of the following answers: "LL" if he likes it very much, "L" if he likes it, "I" if he is indifferent, "D" if he dislikes it, and "DD" if he dislikes it very much. When the inventory is scored, a +2 is given for every LL answered, +1 for every L, 0 for every I, −1 for every D, and −2 for every DD. The algebraic sum of the numbers given to the 60 responses is the subject's score. For each experimental series, the interest test scores are arranged in order of decreasing magnitude and the quartiles are found. Subjects in the first and fourth quarters are rated "extreme," while those in the second and third quarters are called "midrange." (See 2.)

When the ESP scores of the subjects in the midrange group were compared with those of subjects in the extreme group for the thirteen series, the following results[2] were found:

Midrange Subjects				Extreme Subjects			
Number of Subjects	Runs	Dev.	Av. Score	Number of Subjects	Runs	Dev.	Av. Score
212	531	+74	5.14	214	536	−85	4.84

Diff. between means = .298
$CR_d = 2.43$

[2] The total number of runs and the total deviation represented for the midrange-extreme subjects do not agree with those given for the expansion-compression measure since some subjects in each series did not turn in drawings but did turn in interest inventories. A larger number of subjects appear to be represented, however, in the expansion-compression data; this is due to the fact that in three series subjects were given independent expansion-compression ratings for the two different test conditions in the experiment (as was explained above).

The difference between the means of the two groups is marginally significant for these series.

In order to see with what consistency the midrange rating picks out positive-scoring subjects and the extreme rating picks out negative-scoring subjects, a fourfold contingency table was constructed. In the upper left cell of the table below is given the number of subjects in the midrange group who gave positive deviations. Those in the midrange group who gave negative or zero deviations are shown in the upper right cell. Comparable figures for the extreme group are given in the lower cells of the table. The expected numbers are shown in parentheses.

	ESP Deviation +	ESP Deviation O, −	Total
Midrange Subjects	100 (90.6)	112 (121.4)	212
Extreme Subjects	82 (91.4)	132 (122.6)	214
Total	182	244	426

$\chi^2 = 3.41$
d. f. = 1
$P \sim .06$

The chi square is not significant for this table. From the figures in the cells it may be seen that in the extreme group there are many more subjects with negative or zero deviations than subjects with positive deviations. However, in the midrange group also there are more "negative or zero" subjects than "positive" ones.

Expansive-Midrange versus Compressive-Extreme

When the two measures of personality are combined, two groups of subjects are of primary interest: (1) those who received *both* midrange and expansive ratings; and (2) those who were rated *both* extreme and compressive. For the present report, we shall consider the results of only these two groups[3] for the thirteen series:

[3] The original report of this combination (1) included the results of the other two groups possible: midrange-compressive and expansive-extreme. Both these groups scored close to the chance level for all sixteen series pooled.

Expansive-Midrange Subjects					Compressive-Extreme Subjects				
Number of Subjects	Runs	Dev.	Av. Score	CR	Number of Subjects	Runs	Dev.	Av. Score	CR
96	193	+42	5.22	1.51	176	356	−77	4.79	2.04

Diff. between means = .4339
$CR_d = 2.43$

From the larger difference between the means now obtained, we see that the combination of the two measures is more effective than either measure alone. In spite of the reduced number of cases resulting from the combination, the CR of the difference between the groups is marginally significant.[4]

Again we may inquire into the consistency aspect of these measures combined; that is, we want to know whether the majority of expansive-midrange subjects gave positive deviations, and whether the majority of the compressive-extreme subjects gave zero or negative deviations. The contingency table below shows the number of subjects in each group who gave positive, zero and negative results.

	ESP Deviation		
	+	O, −	Total
Expansive-Midrange Subjects	48 (38.8)	48 (57.2)	96
Compressive-Extreme Subjects	62 (71.2)	114 (104.8)	176
Total	110	162	272

$\chi^2 = 5.63$
d. f. = 1
P = .015

The chi square exceeds the .02 level of significance. Of the subjects in the compressive-extreme group, 65% had zero or negative deviations as predicted, while only 35% had positive deviations. In the expansive-midrange group, however, 50% of the subjects had positive deviations and 50% had negative or zero deviations. So the

[4] It will be remembered that for all sixteen series the difference was highly significant ($CR_d = 3.48$).

combination of measures was more successful in predicting negative or zero deviations than positive ones.

Fourteen-Item Scale

In the March, 1950, JOURNAL the 14-item scale for checking the Stuart Interest Inventory was described in detail (3). Briefly, the scale was derived by selecting from the first three clairvoyance group series subjects who averaged 6.00 hits per run and above for four ESP runs and those who averaged 4.00 hits per run or fewer. A study was made of the way these high and low scorers answered the various items of the inventory. Fourteen items were found in which the two groups gave characteristically different answers. From additional study of the first three series it was determined that subjects who made eight or more points on the new scale would be expected to give positive ESP deviations, while those subjects who obtained fewer than eight points on the 14-item scale would be expected to obtain negative or zero ESP deviations. These two groups are designated as "high" and "low" respectively.

The effectiveness of the scale was tested by applying it to the remaining thirteen series. For convenience in comparing the effectiveness of this measure with the others discussed above, the table of results of the 14-item separation of ESP subjects will be reproduced here.

"HIGH" SUBJECTS					"LOW" SUBJECTS				
Number of Subjects	Runs	Dev.	Av. Score	CR	Number of Subjects	Runs	Dev.	Av. Score	CR
185	473	+90	5.19	2.07	241	594	−101	4.83	2.07

Diff. between means = .3602
$CR_d = 2.92$

As the contingency table below shows, the majority of the subjects in the "high" group according to the scale had positive deviations on the ESP tests, while the majority of subjects in the "low" group gave zero or negative deviations. The chi square based on the table is highly significant.

	ESP Deviation +	ESP Deviation O, −	Total
"High" Subjects	99 (79.0)	86 (106.0)	185
"Low" Subjects	83 (103.0)	158 (138.0)	241
Total	182	244	426

$\chi^2 = 15.56$
d. f. = 1
P = .00008

Combination of the Fourteen-Item Scale and the Other Two Measures

From the figures given in the previous section it may be seen that the 14-item scale was more effective than the other measures in separating the ESP subjects into high- and low-scoring groups. In the presentation of results to follow, the 14-item scale will be combined first with the midrange-extreme measure. Then all three measures—expansion-compression, midrange-extreme, "high"-"low"—will be used together in separating the ESP subjects. It was not thought worth while to combine the 14-item scale alone with the expansion-compression measure. Such a combination would probably result in some increase in effectiveness over that of either measure alone, but such a study is hardly profitable. If an experimenter has given his subjects the Stuart Interest Inventory, he has the midrange-extreme measure and the 14-item scale to apply to his data; if he has also had his subjects make drawings, he will most probably want to combine the expansion-compression measure with the two inventory measures. It seems unlikely that much purpose would be served in the future by combining the expansion-compression measure with only one inventory measure.

Fourteen-Item Scale and the Midrange-Extreme Measure

For the combination of the two inventory measures we will first compare the average ESP score of those subjects who received both midrange and "high" ratings with the average ESP score of subjects who were rated both extreme and "low." The ESP results of these two groups are given for each of the thirteen series in Table 1.

Table 1

ESP Subjects Separated by a Combination of the Two Inventory Measures

Series*	Midrange-"High" Subjects				Extreme-"Low" Subjects			
	Number of Subjects	Runs	Dev.	Av. Score	Number of Subjects	Runs	Dev.	Av. Score
S4 Ma	5	10	+ 7	5.70	13	26	− 2	4.92
S4 Sm	7	14	+12	5.86	10	20	−13	4.35
S5	7	14	+ 1	5.07	12	24	+ 8	5.33
S6	5	20	+ 5	5.25	9	36	−32	4.11
S7	5	10	+19	6.90	9	18	+23	6.28
S8	4	8	+ 3	5.38	8	16	0	5.00
R6	13	26	+ 3	5.12	10	20	− 7	4.65
R7	5	5	0	5.00	8	8	+ 6	5.75
R8-A	8	32	+12	5.38	10	40	+11	5.28
R8-B	7	28	+10	5.36	6	24	−27	3.87
H2	6	12	+18	6.50	11	22	− 9	4.59
H4	10	20	+ 8	5.40	6	12	−12	4.00
M1	6	24	+ 7	5.29	5	20	−16	4.20
Total	88	223	+105	5.47	117	286	−70	4.76
		CR = 3.52				CR = 2.07		

Diff. between means = .716
$CR_d = 4.01$

*The names of the series used here are the same as those given in previous reports.

In all, the subjects in the midrange-"high" group made 223 standard ESP runs with a deviation of +105. The CR for this group alone is 3.52. For the total of 286 runs made by the extreme-"low" subjects, the deviation was −70, and the CR was 2.07. The difference between the mean scores of the two groups is highly significant, with a CR_d of 4.01. The probability associated with a CR_d this large or larger is approximately .00006. The difference here between the means is much larger than the differences obtained by using each measure alone.

In eleven of the thirteen series the midrange-"high" group of subjects gave larger average ESP scores than did the subjects in the extreme-"low" group. In only two series was the reverse effect found.

There were 88 subjects in all in the midrange-"high" group. Of these, 67% had positive ESP deviations, while only 33% gave zero or negative deviations. In the extreme-"low" group, 64% of

the subjects gave negative or zero deviations, as predicted, and 36% had positive deviations. When the number of subjects in each ESP scoring category are placed in a fourfold table, we have the following result:

	ESP Deviation +	ESP Deviation O, −	Total
Midrange-"High" Subjects	59 (43.4)	29 (44.6)	88
Extreme-"Low" Subjects	42 (57.6)	75 (59.4)	117
Total	101	104	205

$\chi^2 = 19.50$
d. f. = 1
P = .00001

The chi square is highly significant. This is the most effective separation of ESP subjects yet found by combining any two out of the three measures.

The Two Inventory Measures Combined with Expansion-Compression

In combining the three measures of personality, two groups of subjects were chosen for comparison: (1) only subjects who were rated midrange and "high" on the inventory measures and expansive in their drawings; and (2) only subjects who were rated extreme and "low" on the inventory measures and compressive in their drawings. All other subjects were omitted in this study since our primary interest here is in comparing groups of subjects whose ESP scores might be expected on the basis of previous findings to be most divergent.

There were 38 subjects in the expansive-midrange-"high" group. These gave a total of 77 ESP runs with a deviation of +40, and a CR of 2.28. In the compressive-extreme-"low" group, the total of 90 subjects made 184 ESP runs with a deviation of −72. This has a CR of 2.65. These results are shown in Table 2 together with results for each series separately. The difference between the means of the two groups is .91 and is highly significant, with a CR of 3.36. Although this difference is the largest one mentioned in this report,

Table 2

ESP Subjects Separated by a Combination of the Two Inventory Measures and the Expansion-Compression Measure

Series	Expansive-Midrange-"High" Subjects				Compressive-Extreme-"Low" Subjects			
	Number of Subjects	Runs	Dev.	Av. Score	Number of Subjects	Runs	Dev.	Av. Score
S4 Ma	0	0			8	16	+ 2	5.13
S4 Sm	3	6	+ 3	5.50	5	10	−10	4.00
S5	0	0	....	....	9	18	0	5.00
S6	4	8	+ 3	5.38	13	26	−22	4.15
S7	3	6	+12	7.00	7	14	+16	6.14
S8	1	2	0	5.00	4	8	− 6	4.25
R6	3	6	+ 3	5.50	6	12	− 8	4.33
R7	3	3	+ 4	6.33	4	4	+ 2	5.50
R8-A	4	8	− 2	4.75	13	26	+ 4	5.15
R8-B	8	16	+ 2	5.13	10	20	−29	3.55
H2	2	4	+ 3	5.75	5	10	− 6	4.40
H4	5	10	+ 6	5.60	2	4	− 1	4.75
M1	2	8	+ 6	5.75	4	16	−14	4.12
Total	38	77	+40	5.52	90	184	−72	4.61
		CR = 2.28				CR = 2.65		

Diff. between means = .911
$CR_d = 3.36$

it is not as significant as that for the two inventory measures combined because in using three measures together we have a reduced number of cases.

In the expansive-midrange-"high" group, 63% of the subjects gave positive deviations. The number of compressive-extreme-"low" subjects who have zero or negative ESP deviations was equal to 70% of the total number of subjects in that group. The contingency table for the three-measure combination is given below:

	ESP Deviation +	ESP Deviation O, −	Total
Expansive-Midrange-"High" Subjects	24 (15.1)	14 (22.9)	38
Compressive-Extreme-"Low" Subjects	27 (35.9)	63 (54.1)	90
Total	51	77	128

χ^2 (with Yates' correction) = 10.91
d. f. = 1
P = .001

The chi square for this table is highly significant also. It indicates that the sign of the ESP score (positive, negative, or zero) is significantly related to the personality ratings of the subjects. The results for all the measures and combination of measures are presented graphically in Figure 1.

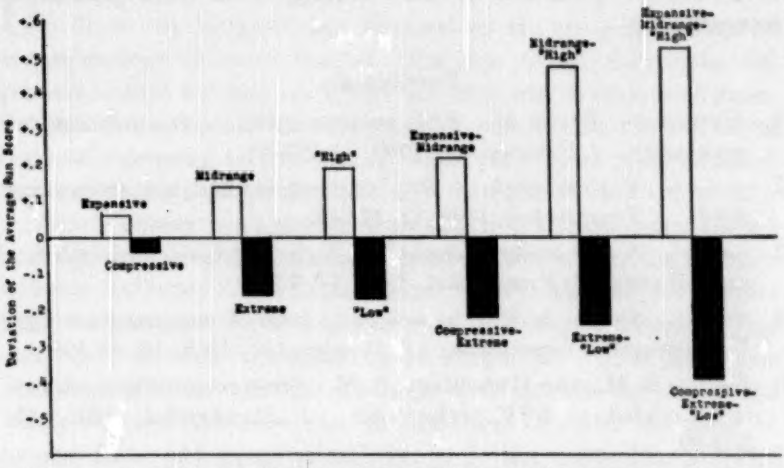

FIG. 1. Comparison of the effectiveness of the various measures of personality in dividing the ESP subjects of thirteen clairvoyance card series into high- and low-scoring groups. The ESP card results for subjects who were rated expansive or compressive in their drawings are shown first. The results obtained by using each of the two measures based on the Stuart Interest Inventory are given next. These are followed by graphs of the results obtained when various combinations of the measures were used.

COMMENTS

In terms of the difference between average run scores for the different groupings, the best separation of subjects was obtained from a combination of the three measures of personality. This result is not unexpected; when measures, each of which separates high and low ESP scores with some degree of success, are combined, we expect increased effectiveness. It is not inevitable that a combination of measures will be more successful in predicting high and low ESP scores, but that is the most probable result of such a combination.

While it is not possible yet to give clear descriptive accounts of the characteristics of personality measured by these three methods,

it is an advance of some value to find results of a fair degree of consistency on this line of inquiry. The fact that when the three measures were combined to select high- and low-scoring subjects sixty-eight per cent of the subjects were placed in the appropriate group, indicates that some progress is being made toward the objective of dependable prediction of ESP scoring trend from personality measurement.

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MINOR ARTICLES AND NOTES

EHRENFELS' "EXPLANATION OF PROPHECY"

By MILDRED FOCHT[1]

DR. GARDNER MURPHY has summed up the chief difficulties of parapsychology in these words: "The two things that make the greatest trouble for parapsychology are, first, that it deals with materials which are taboo from the point of view of the present world frame-of-reference; second, that its facts are only to a very limited degree repeatable independently in different laboratories" (**8**, p. 62).

Nearly twenty years ago there appeared, in a magazine published in Prague, an essay by Christian Ehrenfels, best known for his early writings on theory of value and Gestalt theory, who for thirty years had been professor of philosophy in the University of Prague. This essay bore the title, "Explanation of Prophecy." In it the author categorically states that "the whole group of astonishing phenomena which we have for some time classed together under the name of parapsychical and paraphysical" (**2**, p. 5) are explicable, provided we include in our world frame-of-reference a kind of phenomenon "from whose express recognition," he says elsewhere, "science up to now has shrunk away with a peculiar horror, although science can dispense with it as little as practical life" (**3**, p. 8). This kind of phenomenon, usually called Gestalt or Gestalt-quality (often translated, rather inadequately, as "configuration"), is that something which is more and other than the sum of its constituent parts, although these are essential to its existence. Thus a melody is more and other than the sum of the notes which compose it; a sentence is more and other than the sum of the words which compose it; a living body is more and other than the sum of the cells or organs which compose it.

Ehrenfels begins his exposition by defining prophecy as the foretelling of future events or, in a wider sense, as foreseeing or mere presentiment, when this comes about in a way different from the

[1] This is the first contribution to the JOURNAL by Dr. Focht, who until recently was an instructor in the high school connected with Hunter College, New York. She is the translator of the English edition (1948) of Ehrenfels' *Cosmogony* referred to in this article.—Ed.

normal one to which we are accustomed: that is, different from the inferring of future events as effects of given causes. The astronomer's prediction of a solar eclipse is not a prophecy; nor is the craftsman's foreseeing of his finished work—the cabinet, the shoe, the key. On the other hand, prophecy occurs when the causes of the future event are hidden, and yet the event itself is foretold.

By explanation of an event, Ehrenfels continues, is meant classification of it as a specific instance in a more general category of events. For example, the phenomenon of rain is "explained," when it is understood as a special instance of the condensation of water-vapor by cooling. All prophecies would be explained, therefore, if it could be shown that in each particular case a more-than-human, superior mind was at work, a mind which had foreseen the event in a natural way: either by merely observing, as the astronomer foresees the solar eclipse; or by willing, as the locksmith foresees the key—and had communicated this its prevision to a human being.

To a devout soul, it may at once seem obvious that there is such a superior mind: it is God, who is pleased from time to time to bestow on certain human beings glimpses of what is to be. But here we come upon a staggering difficulty. If we accept this explanation, then in the majority of cases we must also accept a God who is not a just and kind father, but rather a hateful Satan. Rarely do the prophecies seem to be of any use: almost always they merely disturb and terrify the one immediately concerned in the event foretold (usually a misfortune), without affording him any chance of averting what is prophesied—which of course would then no longer be prophesied.

As a striking example of this, Ehrenfels gives at some length a case related by Maeterlinck in his "L'hôte Inconnu" (**7**, p. 164), which in turn Maeterlinck had taken from a condensation (**6**, p. 266) of the original account by Professor Hyslop (**4**). Despite this repeated handing-on from one writer to another and from one language to another, the essential facts are not changed in Ehrenfels' version.

Briefly, it is the case of a Mrs. D——, who feels a strong but vague presentiment of some disaster threatening her family. The presentiment finally concentrates on her infant daughter Lettie.

Whenever she plans anything for the child's future, a voice whispers in her ear, "She'll never need it." Furthermore, she develops an increasing fear of matches and consequently takes every precaution in their use. On the day of the catastrophe, as she put the child in her cradle for a nap, the voice whispers, "Turn over the mattress." But being busy and preoccupied, she disregards it, and goes to attend to household matters. Soon she hears screams; she comes in haste, to find the cradle and covers in flames and the child so badly burned that she dies three hours later. Presumably there was a match under the mattress and this match had somehow been accidentally ignited.

Ehrenfels comments that if we assume that a being superior in intellect and physical power has foreseen this event in the natural way and purposely shares its prevision with the unhappy mother, we get the picture, not of a kind God, but of a malignant devil, who finds a sadistic pleasure in torturing the poor woman. Why did not the voice that told her to turn the mattress also tell her that a match was lying under it? Why did not the voice that warned her of the necessary action also tell her the reason for it?

Now of course, adds Ehrenfels, not all prophecies are of this kind. It does happen—not often, but still it does happen—that human beings are warned in time by presentiments of disaster, and are enabled to avert the disaster. However, the great majority of credibly reported prophecies are nothing but useless tormentings of mortals. What purposes can and must we ascribe to the psychical personalities—and here is our great difficulty in explaining prophecy —who mediate to us the previsions of the future?

This is the problem which Maeterlinck tries in vain to solve in "L'hôte Inconnu." After proposing and rejecting one hypothesis after another, he simply falls back on the concept of the "unknown guest," of a power whose existence we must recognize, who often intervenes in our lives, but regarding whose nature we nevertheless are not able to form any kind of plausible opinion. And there Maeterlinck stops; but not Ehrenfels. Now, says the latter, Maeterlinck has brought the problem to the point where it can be solved; let us simply go on a little further. There are superhuman intelligences that transmit their previsions to human beings. "What ends can these superhuman intelligences possibly pursue in doing this?

Nowhere can we discover such ends. Very well then: these superhuman intelligences are pursuing no ends at all. That means: the transmission takes place without their intention; indeed, often without their knowledge" (2, p. 4).

These superhuman intelligences, as Ehrenfels sees them, are not God himself nor god-like beings. They are rather beings which, not unlike us human ones, engaged in the struggle for existence, interfere with each other's lives, repeatedly come directly in conflict, often combine. Applying the concept of Gestalt, they are to be thought of as the unitary over-souls which are based on human groups (symbioses) forming themselves in the course of history: as my individual self or soul is based on the group (symbiosis) in which my heart, my lungs, my stomach, my liver, etc., function, composing what I call my body. That there are such over-souls is a highly probable assumption in Ehrenfels' opinion, quite apart from the problems of prophecy. It is well-nigh certain, in the analogous insect-stages of bees and ants, that their astounding performances point to an intellect as regulator, which cannot reside in any single individual of the totality, but only in that totality as a whole. We human beings, he says, have not arrived at such fixed results as the bees and ants: with us the over-souls are still *in statu nascendi*, in process of being born, and various principles of combination and division—national, political, economic, religious—are at the moment still in conflict.

Every over-soul in our realm of existence, Ehrenfels continues, has a body. The body of national soul, for instance, is formed collectively by the bodies of the members of the national group at any given time. A person may belong to two or even more such superpersonalities at the same time, like the cells which belong, in the case of Siamese twins, to both organisms. Thus one and the same person may be both an Italian citizen and a Roman Catholic simultaneously.

The explanation of prophecy, then, as given by Ehrenfels, is this: "In the natural way, the over-soul foresees an event such as the death of an individual member among the totality which compose its body, either being itself passively receptive, or (and this may often happen) seeing itself compelled, by deliberations into which we little under-souls cannot enter, to resolve on the death of one of

the individuals on which it is based, and to bring this about (in the same way as we resolve on the extraction of a diseased tooth or the amputation of a limb poisoned by a snake-bite). The over-soul becomes not a little disturbed by this, and has absolutely neither superfluous time nor strength to control or even guide the currents of reflexes which, proceeding from the center seat of its psycho-physical experience, transmit to its under-souls some part of the contents of its consciousness" (**2**, p. 5).

Possibly we might use, as an analogy to this, what happens when I am much excited, waiting for a prearranged signal of some kind, and my heart beats wildly; or when I am in terror, seeing a gun pointed at me, and my knees shake. As we say, "my" excitement "affects" my heart; "my" terror "makes" my knees shake. The effects appear without my volition, however; I may even be unconscious of them.

Ehrenfels does not stop, though, with merely giving his explanation of prophecy. He goes on to cite the biologist-philosopher Hans Driesch, who asserts that in life-process, there is intervention of non-material forces in material happenings (**1**, pp. 138-9). This intervention, however, is below the threshold of attention when it affects only the life-process of an individual. But, says Ehrenfels, when it is a matter of the life-process of an over-soul's body, which may be composed of millions of individual bodies (as a "national soul's" body is made up of the millions of the nation's members), these interventions will assume million-fold dimensions, and may very well arise above the threshold of attention, occasioning the appearance of what we know as telekinesis, levitation, and the like. "In details," Ehrenfels admits, "there is naturally still much to be cleared up here. But what is essential in the explanation is furnished by reference to the over-soul" (**2**, p. 5). More specifically, that means: "by reference to symbiotic combinations, having the nature of reciprocal relations, of organic beings with the over-soul based on them" (**2**, p. 6).

In Professor Hyslop's original account of the experience of Mrs. D——, the following details are recorded, which do not appear in Maeterlinck's retelling, and consequently were not known to Ehrenfels. (A) On the morning of the child's death, Mrs. D—— prayed

as usual during family worship for each member of the family in turn; but when she tried to use the customary phrase for the child Lettie, something seemed to stop her. (B) Mrs. D——'s sister said (after the child's death, but without communication with Mrs. D——) that about a week before the catastrophe she herself had an overwhelming impression of some great calamity about to befall the family—meaning, as the context indicated, the whole family connection. The sister felt an impulse to pray for each one, but when she came to the child Lettie her voice suddenly stopped. She went on, but only with great difficulty, and could not bring herself to refer to the child by name.

If we accept Ehrenfels' explanation of prophecy, we might say that the presentiment of disaster felt by both sisters, and the difficulty which both experienced in praying for the doomed child, were effects of the agitation in the "family-soul," by which the child's death was foreseen in some natural way possible to such an over-soul. This explanation has the more plausibility, too, because of the fact that Ehrenfels, as has been said, was ignorant of these details in Professor Hyslop's original account.

An observation made by William James also seems significant in this connection. Commenting on the celebrated medium, Mrs. Piper, James remarks that five ladies, all blood relations, and two men connected with the same family by marriage (James himself being one of the men) were much surprised by the communications they received. James says: "The medium showed a most startling intimacy with this family's affairs" (**5,** p. 103). Here again one might perhaps explain by assuming that the "family soul" was involved.

To return to Dr. Murphy's statement of the two great difficulties of parapsychology: these may readily be accounted for, if one believes with Ehrenfels that over-souls in his sense do actually exist. The first difficulty, the inability of parapsychology to fit its materials into the present world frame-of-reference, may be accounted for by the latter's failure to recognize Gestalt, to which category over-souls belong. The second difficulty, the very limited ability of parapsychology to repeat its facts independently in different laboratories, may be accounted for by its own failure to realize that a prime con-

dition of such repeating is the cooperation of over-souls. One might say briefly: the peculiar difficulties of parapsychology will vanish if it proceeds on the assumption that over-souls exist. At all events, this is what Ehrenfels believed.

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BOOK REVIEWS

THE REACH OF THE MIND, by J. B. Rhine. Pp. 188. Faber and Faber, London, 1948.

[The following review of the English edition of J. B. Rhine's book, *The Reach of the Mind*, appeared in the periodical, *Mind*, for July, 1949. It is being reprinted here complete except for the first two paragraphs. Professor Price, a member of our Advisory Board, has given in his review a critical analysis of many points that are of general interest for parapsychology today, and we believe our readers will find this discussion worth while whether or not they fully concur in its conclusions.—Ed.]

Dr. Rhine begins by distinguishing two conceptions of human personality. First, there is the traditional "psychocentric" conception which most of us are still taught in youth, and which is still the basis of most of our social institutions: the dualistic conception, which regards the human being as a compound of two distinct but interacting entities, mind and body. Secondly, there is the "cerebrocentric" conception (either Epiphenomenalist or Behaviorist) which is accepted nowadays by the majority of scientifically educated persons, including the majority of professional psychologists. According to Dr. Rhine, the new experimental evidence shows decisively that the cerebrocentric conception is mistaken, and that some form of the psychocentric conception is right, though not necessarily the traditional theological version of it.

First he considers extrasensory perception (ESP). This term is equivalent to "telepathy and/or clairvoyance." It is not a very happy one, though most psychical researchers now use it. For whatever telepathy and clairvoyance may be, they are not very like ordinary perception: they only resemble it in one way—in being means of acquiring information about matters of fact. Still, a new term was needed, because in many experimental investigations it is impossible to distinguish between these two supernormal powers. We often cannot tell whether the subject is clairvoyantly cognizing the card itself, or is telepathically cognizing the visual sensations of the experimenter who looks at it; and the decision between these two explanations becomes still more difficult when the possibility of precognitive telepathy or precognitive clairvoyance is admitted. Now it does not seem possible to account for ESP by any hypothesis of

physical radiations—at any rate if we use the words "physical" and "radiation" in anything like their ordinary meaning. Distance in space appears to make no difference to it. The "percipient" and the "perceived" may be in the same room, or they may be many miles apart, even hundreds of miles. Stranger still, ESP appears to be indifferent to time too, at any rate in some degree. It may be precognitive, and it may be retrocognitive. There has long been evidence of this from well-attested spontaneous cases. There is now experimental evidence as well.

In the second stage of Dr. Rhine's argument, we are introduced to a phenomenon which is even stranger, if possible, than precognition. This is what he calls Psychokinesis or PK. (It is sometimes called Telekinesis.) In PK the mind is supposed to cause changes in physical objects outside its own body, not by means of the nervous system and the muscular apparatus, but directly, by mere thought or "will." The reader must be warned that there has been some controversy about PK among British psychical researchers. Some experimental work has been done on the subject in this country, though not very much—nothing like as much as at Duke—and the results so far seem to be indecisive. The late Mr. Whately Carington did some experiments in the last few months of his life, and appears to have been satisfied of the reality of PK. But most British experimenters, if I am rightly informed, have had only chance results, though a few have had results which were above chance but not significantly so. Nevertheless, the PK work done at Duke is undeniably impressive as it stands. We must admit, I think, that a *prima facie* case has been established, even though not a conclusive one; and philosophers would do well to consider what Dr. Rhine has to say on the subject.

What happens in a PK experiment is something like this. A die is repeatedly thrown, and the subject is asked to "will" high faces (*i.e.*, he is to will that the die shall fall with 4, 5 or 6 spots uppermost). With some subjects, it is found that in a long series of throws the proportion of high faces significantly exceed the chance expectation. The same thing happens when the subject is asked to "will" low faces instead of high ones. It does not appear to matter how many dice are used. If anything, the effect is more marked

when many dice are thrown at once. (In one experiment, ninety-six dice were thrown at once.) Again, it does not appear to matter whether the dice are thrown by hand or by a machine. The above-chance deviation is admittedly much smaller than it is in the best ESP cases, but it is still significant.

If these results are accepted, what conclusions are to be drawn from them? Clearly they tend to support the traditional belief in mind-brain interaction, and the dualistic conception of human nature which goes with it. For if Smith's mind does act upon Smith's brain, the process must be "psychokinetic." Conversely, believers in the old Interaction Theory have no right to be surprised at Dr. Rhine's results. They have no doubt supposed hitherto that Smith's brain is the *only* piece of matter which Smith's mind ever acts upon in this direct and "psychokinetic" way. But there is no *a priori* reason why it should be. The question is a purely empirical one. If good empirical evidence is produced to show that Smith's mind does sometimes act upon other pieces of matter in a like manner, the Dualist ought to accept that evidence in a spirit of Natural Piety. Of course if the Epiphenomenalist theory is true, it will follow that PK cannot occur at all, and Dr. Rhine's results will have to be explained away somehow. But whether Epiphenomenalism *is* true is again an empirical question. The arguments which support it are empirical ones, derived from physiology and the other biological sciences (for we need not waste much time on the *a priori* argument that the action of mind upon matter is "inconceivable"). It must therefore be logically possible that there should be adverse empirical evidence, whether we think or do not think that Dr. Rhine has in fact provided it. A Behaviorist, on the other hand, might conceivably accept Dr. Rhine's evidence, but only at the cost of admitting that subvocal speech (the Behaviorist equivalent for Dr. Rhine's "acts of will") can have a direct effect on environmental objects: an admission savoring somewhat of primitive magic.

Dr. Rhine makes two other observations about PK. The first is that in the PK tests with dice, etc., "mind-matter relations . . . can be studied in a simpler and more controllable situation than the thought-brain complex provides." It is very much easier to study the movements of little cubes than the immensely complicated phys-

ical processes which go on in a living brain. Secondly, he maintains that there is a very close connection between PK and ESP, so close that they can be regarded as two aspects of a single process. In clairvoyance, he says, the object cognized must be causing some change in the cognizing mind. He then argues, if I follow him correctly, that here as elsewhere there can be no action without reaction; if A acts upon B, B must also be acting in some way upon A. He concludes that in clairvoyance "the mind therefore does something to the object, even though that something be too slight to be detected"; when clairvoyance occurs, PK must be occurring too. Thus, given the existence of ESP, the existence of PK could have been inferred deductively, even before the empirical evidence for PK had been discovered (p. 73). I feel uneasy about this argument. Does it follow that because we have succeeded in devising a "causal theory" of ordinary sense-perception, we must also hold a causal theory of ESP (with a very much shorter causal chain of cause)? On the contrary, it might conceivably be an ultimate fact about the mind that it is in a *direct* relation all the time with an indefinitely large number of environmental objects; and that the function of the sense-organs and afferent nerves is to put biologically useful blinkers on it, by forcing it to attend only to those environmental objects which are biologically relevant. In that case, normal sense perception would need a causal explanation, but clairvoyance would not; it would rather be the *absence* of clairvoyance which would need one. In any case, our evidence for the ordinary physical and physiological explanation of normal perception is purely empirical, whatever difficulty epistemologists may have in making sense of it. Is there any empirical evidence to support a parallel theory of ESP? And even granting the parallelism, is it really true that in ordinary sense perception the perceiver acts upon the perceived, as well as the perceived on the perceiver? In touch, no doubt, the percipient's body causes a change in the object touched, though I cannot see that his mind does. But in sight or hearing, do I *do* anything to the external object which I see or hear? Or is the scene of operations to be transferred to the sensory centers in the brain, and are we to suppose that when a visual or auditory sensation occurs the sentient mood reacts somehow on those very same brain cells, and causes a

physical change in them? Perhaps, but is there any empirical evidence that it does? No doubt when the sensation occurs, the mind does often act upon *other* brain cells, namely, on the motor centers. But this is not relevant to Dr. Rhine's argument, which requires that it should act upon the sensory centers themselves.

If I am right, Dr. Rhine has not shown that whenever there is ESP there *must* also be PK. But he also argues, conversely, that whenever there is PK there must also be ESP, and this argument is a much more plausible one. For how can the subject control the movements of a falling die (or of many dice falling at once) unless he somehow *perceives* the physical position of the die at the critical moment when the PK "force" is to be applied? He cannot perceive this in any normal manner; the dice fall much too quickly for normal sight to follow their movements with the accuracy which would be needed. Therefore he must be perceiving them extrasensorily, *i.e.*, by clairvoyance.

This argument again assumes that PK must be analogous to our normal action upon environmental objects in one respect at least, namely, in being guided or controlled by perception of some kind (like the action of poking at a die with a long thin rod, or influencing the direction of its motion by squirting a stream of water at it). Is this assumption necessarily right? If it was, I do not see how Dr. Rhine could also be right in assuming that the action of mind upon brain is also a case of PK. When I move my little finger, does my mind have to *perceive* the brain cells in the motor centers (unconsciously and clairvoyantly) in order to direct its "mental energy" into the appropriate parts of the nervous system? Perhaps, but there is no evidence that it does. And yet this operation would seem to be at least as delicate as changing the direction of movement of a die, and as much in need of perceptual guidance. Again, let us ask ourselves what a Vitalistic biologist would say about such organic processes as growth, or assimilation of food, or the healing of wounds. It is relevant to ask this question, for if PK does really occur, there is something to be said for old-fashioned Vitalism after all. Would the Vitalist say that the ψυχή or vital principle *perceives* the parts of the organism which are in need of nutriment or repair at a particular moment, and can only ensure that the appropriate

chemical substances reach the part of the body which needs them, if it is able to watch them as they go? (We may notice that Dr. Rhine himself regards psychosomatic healing as a form of PK.) I think that there would be something logically vicious about such an explanation. For if the vital principle acts in this kind of way it is nothing but a little man—a very sharp-sighted and preternaturally skilful *homunculus*—who somehow manages the human body from inside. And then the same problem will arise over again about the internal arrangements of the *homunculus* himself. It does not follow that all forms of vitalistic theory are absurd. But this "anthropomorphic" form of it—the form of it which Dr. Rhine's argument would suggest—does seem to be untenable.

These are the difficulties we get into, if we try to think of PK as a "perceptually guided" process, in the way that threading a needle or poking something with a rod are perceptually guided. Is there any other conceptual model which we might use instead? The only one I can suggest is *ideo-motor* behavior. We might perhaps suppose that ordinary ideo-motor behavior is just a special case of something more general, and that all ideas have an inherent tendency to execute themselves or realize themselves by means of material movements. If they cannot manage it in the ordinary way by means of the nervous system and muscular apparatus of their owner, perhaps they sometimes manage it telepathically by affecting some other mind and making use of *his* nervous system and muscles. (Automatic writing may be an example of this.) If they cannot manage it in that way, perhaps they sometimes manage it directly, without using any nervous system at all: provided they are not inhibited, as they usually will be, by other adverse ideas—for example, by the fixed idea in the mind of the subject himself, or of the bystanders, that "such things simply do not happen." This suggestion may well be utter nonsense, of course. But if there is anything in it, the connection between PK and ESP is much less close than Dr. Rhine believes. It would still be true, all the same, that they have a very important negative feature in common. Neither of them would operate indirectly, by the mediation of the nervous system, as ordinary perception and ordinary voluntary action do. ESP would be independent of the *afferent* parts of the nervous system, and PK

would be independent of the *efferent* parts of it. In both cases there would be a direct or unmediated relationship between the mind and other entities.

There are many other points in Dr. Rhine's book which should interest the philosophical reader, whether he is a methodologist, or an epistemologist or a moralist. The discussion of free will and precognition in Chapter 5 will provide healthy exercise for the analytically minded. The problem is essentially the same as the old problem of reconciling free will with the non-inferential prescience of God; and the solution which Boethius offered for the old theological problem (*De Consolatione Philosophiae*, Book V) may perhaps apply to this modern "parapsychological" version too. Students of methodology will be interested in Dr. Rhine's discussion of the "decline effect" which appears to be a common feature of all parapsychological experiments (Chapter 10). And linguistic analysts might profitably consider the questions posed in Chapter 9, "How Normal Are Psi Capacities?" (I think they might find that the *emotive* meaning of the word "normal" has a good deal of relevance to the issue, and they might have something to say about "persuasive definitions.")

Chapters 11 and 12, the last two chapters of the book, will interest the plain man, as well as the philosopher and the psychical researcher. I shall only make two remarks on Chapter 12, "Consequences for Relations among Men." One is that Dr. Rhine's estimate of the present status of the problem of survival, and his suggestions about the way in which it should be tackled, seem to me eminently sensible. On the other hand, his contention that the general acceptance of the "psychocentric" view of human nature would necessarily result in better relations among men seems much more disputable. Some of the most devastating wars we know of—for instance the Albigensian crusade and the Thirty Years War—occurred in the Ages of Faith, when a "spiritual" conception of human nature was accepted by almost everyone.

Chapter 11, "Prospects of Application," calls for more comment. Indeed it is one of the most exciting chapters in the book. Dr. Rhine begins by pointing out that both ESP and PK are at present unreliable and elusive capacities, and he asks what makes them so. He answers, rightly I think, that it is their unconscious or unintro-

spectible character; the subject has no means of knowing whether his "shots" are right or wrong. Could this obstacle be removed in some way? Dr. Rhine suggests various methods, direct and indirect, by which it might possibly be removed or circumvented: hypnosis, or the use of drugs, or one of the systems of psychological and psychophysical exercises such as has long been practiced in the Far East. He thinks the time has come when such methods of lowering or altering the threshold of consciousness should be experimentally investigated by psychical researchers.

Let us now assume that the obstacle *will* be removed some day, and that ESP will be brought under conscious control and thereby made reliable. What consequences may be expected to follow? Dr. Rhine offers some interesting speculations on this (he says emphatically that they are only speculations). The chief consequence, he thinks, would be "to turn a searchlight upon all the secrets of man and nature." Dr. Rhine seems to welcome this prospect, on the ground that the plans of every malefactor would be detected as soon as they were formed; war, and large-scale crime too, would no longer be possible. No doubt. But would social life be possible either, if the secrets of all hearts were revealed? The complete abolition of all privacy—a Behaviorist's paradise, though attained by most un-Behavioristic means—is a state of affairs almost too horrible to be contemplated. But perhaps we need not despair. There may be a way of escape, though Dr. Rhine himself suggests none. If we do ever acquire conscious control of ESP, perhaps we shall also gain conscious control of the means of screening ourselves against it. The "screen," no doubt, would have to be mental, not physical, since ESP seems to be a nonphysical process. But some such screen must exist already, though we have no idea how it works, since there are people who are "bad" telepathic agents; in other words, their thoughts and emotions are not detectable even by "good" telepathic percipients. Let us hasten, before it is too late, to investigate what this salutary "badness" depends upon.

H. H. Price.

THE LIFE OF RICHARD HODGSON, by Alex T. Baird. London: Psychic Press, Ltd., 1949. Pp. xxxi + 310.

Biographically speaking, too many of the early research workers of the Society for Psychical Research have passed off the scene with a few paragraphs in the *Journal* or *Proceedings*, and with only their published work as evidence of their contribution to the field of parapsychology. This is pathetically true in the cases of Edmund Gurney and Dr. Richard Hodgson. Mr. Baird has gathered together what fragments he can find concerning Dr. Hodgson in the form of a short, somewhat popularized, and very readable biography.

It is regrettable that much of the correspondence of Hodgson with the S.P.R. and his American and British friends seems to be lost or buried in inaccessible files. Most of the information gathered by the author is taken from Hodgson's published papers in the *Proceedings of the S.P.R.* and its American Branch, which closed following Hodgson's death. A few letters found in the files of the American S.P.R. throw some light on his earlier Australian friendships.

Hodgson worked for the American Branch of the S.P.R. for a pittance, held by the interest of a new research field into which he was eminently fitted to delve. He held doctor's degrees in law and philosophy, and had studied psychology at Cambridge, where he came in contact with F. W. H. Myers and Henry Sidgwick. Certain it is that Hodgson, following his study of Eglinton, Blavatsky, and Palladino, came to the Piper mediumship with small hopes of screening any paranormal material from the usual mediumistic chaff.

In his relationships with the Piper investigation, Hodgson came in contact with most of the research then going on in England and America. Mr. Baird gives his reader a curtailed but excellently conceived account of the highs and lows in that mediumship, and a good picture of its investigators. He calls Mrs. Piper "the medium who put survival on the map." Hodgson at first thought the mediumship to be fraudulent; changed his opinion when repeated evidences of telepathy and clairvoyance were forthcoming; and after many years reached the conclusion that the survival hypothesis was superior, in assessing the better portion of the Piper material. Mrs. Sidgwick of Newnham College, Cambridge, reached the same conclusion in

her latter years. She had weighed the Piper mediumship in the balance very carefully,[1] and her later assessment of the "Willett" mediumship, to which she had full access, weighted the scales in favor of survival, in her mind.

Baird gives the reader an absorbing account of the S.P.R. from 1882 to 1905, written in a vein that will attract the lay reader. The volume contains a short introduction by Sir Ernest Bennett of Oxford University, and is dedicated to Mrs. Lydia W. Allison, Editor of the *Journal of the American Society for Psychical Research*, and to William H. Salter, former President of the Society for Psychical Research.

EDMOND P. GIBSON.

[1] *Proceedings of the Society for Psychical Research*, Vol. 28, pp. 1-653.

GLOSSARY

In order to avoid constant redefining of commonly recurring terms in papers appearing in this JOURNAL, the following definitions are submitted for convenient reference.

A simple description of the basic experimental methods and of the statistical procedures to be followed in evaluating ESP (both card tests and drawings tests) and PK may be found in the *Handbook of Tests in Parapsychology* by Betty M. Humphrey (published by the Parapsychology Laboratory, Duke University, Durham, N. C.).

AGENT: In tests for telepathy, the person whose mental states are to be apprehended by the percipient. In GESP tests, the person who looks at the stimulus object.

AVERAGE SCORE: Average number of hits per run.

BT ("Broken Technique"): The clairvoyance technique in which each card is laid aside by the experimenter as it is called by the subject. The check-up is made at the end of the run.

CALL: The ESP symbol selected by the subject in trying to identify a target.

CHANCE: The complex of undefined causal factors irrelevant to the purpose at hand.

CHANCE EXPECTATION = MEAN CHANCE EXPECTATION: The most likely score if only chance obtains.

CHANCE AVERAGE: Mean chance expectation expressed as an expected score, generally in terms of average per run.

CHI SQUARE: A sum of quantities each of which is a deviation squared divided by an expected value. Also a sum of the squares of CR's.

CLAIRVOYANCE: Extrasensory perception of objective events as distinguished from telepathic perception of the mental state of another person.

CR (CRITICAL RATIO): A measure to determine whether or not the observed deviation is significantly greater than the expected random fluctuation about the average. The CR is obtained by dividing the observed deviation by the standard deviation. (The probability of a given CR may be obtained by consulting tables of the probability integral, such as Pearson's.)

CR OF THE DIFFERENCE: The observed difference between the average scores of two samples of data divided by the standard deviation of the difference.

DECK: Twenty-five ESP cards.

CLOSED DECK: An ESP deck composed of five each of the five symbols.

OPEN DECK: An ESP deck made up of the ESP symbols selected in random order.

DEVIATION: The amount an observed number of hits or an average score varies from the mean chance expectation or chance average. A deviation may be total (for a series of runs) or average (per run).

DIE THROW: The elementary unit of data in a dice-throwing test represented by the throwing and reading of a single die, no matter how many dice are thrown at a time.

DISPLACEMENT: ESP responses to targets other than those for which the calls were intended.

BACKWARD DISPLACEMENT: ESP responses to targets preceding the assigned targets (the ones for which they were intended). Displacement to the targets

one, two, three, etc. places preceding the assigned target are designated as (−1), (−2), (−3), etc.

FORWARD DISPLACEMENT: ESP responses to targets coming later than the assigned targets. Displacement to the targets one, two, three, etc. places after the assigned target are designated as (+1), (+2), (+3), etc.

DT (Down Through): The clairvoyance technique in which the cards are called down through the deck before any are removed or checked.

EMPIRICAL CONTROL: An experiment which wholly or partially follows the main experiment with the exception that the conditions are designed to exclude the possibility of the hypothesis being tested.

ESP (EXTRASENSORY PERCEPTION): Response to an external event not presented to any known sense.

ESP CARDS: Cards, each bearing one of the following five symbols: star, circle, three parallel wavy lines (called "waves"), square, plus.

ESP SYMBOLS: See plate opposite page 1, this JOURNAL, Vol. 1, March, 1937.

EXPECTATION; see CHANCE.

EXTRACHANCE: Not due to chance alone.

FREE MATERIAL: The stimulus objects of experiments in which an unlimited or unspecified range of stimulus objects is employed (as contrasted with methods such as card-calling in which the subject knows that the stimulus object is one of a known range).

FREE RESPONSE METHOD: An ESP test method in which a relatively unlimited range of stimulus objects is used and in which the subject is instructed to express freely as his response any range of thoughts and ideas.

GESP (GENERAL EXTRASENSORY PERCEPTION): A technique designed to test the occurrence of extrasensory perception, permitting either telepathy or clairvoyance or both to operate.

HIGH-DICE TEST: A PK technique in which the aim of the subject is to try to influence a pair of dice to fall with the two upper faces totaling eight or more.

LOW-DICE TEST: A PK technique in which the aim of the subject is to try to influence a pair of dice to fall with the two upper faces totaling six or less.

MEAN CHANCE EXPECTATION; see CHANCE.

P (PROBABILITY): A mathematical estimate of the expected relative frequency of a given event if chance alone were operative.

PARAPSYCHOLOGY: A division of psychology dealing with those psychical effects which appear not to fall within the scope of what is at present recognized law.

PERCIPIENT: The person who makes the calls in an ESP test.

PK (PSYCHOKINESIS): The direct influence exerted on a physical system by a subject without any known intermediate physical energy or instrumentation.

PRECOGNITION: Cognition of a future event which could not be known through rational inference.

PREFERENTIAL MATCHING: A method of scoring free responses. A judge ranks the stimulus objects (usually in sets of four) with respect to their similarity to, or association with, each response; and/or he ranks the responses with respect to their similarity to, or association with, each stimulus object.

PSI: A general term to identify personal factors or processes in nature which transcend accepted laws. It approximates the popular use of the word "psychic" and the technical one, "parapsychical."

PSI PHENOMENA: Occurrences which result from the operation of psi. They include the phenomena of both ESP (including precognition) and PK.

QD (QUARTER DISTRIBUTION): The distribution of hits in the record page (or in a logical subdivision thereof, such as the set or the half-set) as found in the four equal quarters formed by dividing the selected unit horizontally and vertically.

RUN: A group of trials, usually the successive calling of a deck of 25 ESP cards or symbols. In PK tests, 24 single die throws regardless of the number of dice thrown at the same time.

SCORE: The number of hits made in one run.

TOTAL SCORE: Total of scores made in a given number of runs.

AVERAGE SCORE: Total score divided by number of runs.

SD (STANDARD DEVIATION): Usually the theoretical root mean square of the deviations. It is obtained from the formula $\sqrt{npq}$, in which n is the number of single trials, p the probability of success per trial, and q the probability of failure. (For ESP cards, SD $= 2\sqrt{}$no. of runs.) Sometimes the SD used is that estimated from the observed variability in the scores.

SD OF THE DIFFERENCE: For both ESP cards and PK tests using dice, the SD of the difference is equal to $\sigma_s \sqrt{1/R_1 + 1/R_2}$ where σ_s is the SD of a single run and R_1 and R_2 are the number of the runs in the respective samples compared. This gives the SD of the difference for run score averages.

SERIES: Several runs or experimental sessions that are grouped in accordance with a stated principle.

SESSION: A unit of an ESP or PK experiment comprising all the trials of one test occasion.

SET: A subdivision of the record page serving as a scoring unit for a consecutive group of trials, usually for the same target.

SEVENS TEST: A PK technique in which the aim of the subject is to try to influence a pair of dice to fall with the two upper faces totaling seven.

SIGNIFICANCE: A numerical result is significant when it equals or surpasses some criterion of degree of chance improbability. The criterion commonly used in this JOURNAL is a probability value of .02 or less, or a deviation in either direction such that the CR is 2.33 or greater.

SINGLES TEST: A PK technique in which the aim of the subject is to try to influence dice to fall with a specified face up.

STIMULUS OBJECT: The ESP card or drawing or other object, some identifying characteristic of which is to be apprehended by the percipient.

TARGET: In ESP tests, the stimulus object; or in telepathy, the mental state of the agent. In PK tests, the faces of the die (or combination of faces) which the subject attempts to bring up in the act of throwing.

TARGET CARD: The card which the percipient is attempting to perceive (i.e., to identify or otherwise indicate a knowledge of).

SUBJECT: The person who is experimented upon. In ESP tests, most commonly the percipient (though also the agent in GESP and telepathy). In PK tests, any individual whose task it is to influence the objects thrown.

TARGET DECK: The deck of cards the order of which the subject is attempting to identify.

TARGET FACE: The face on the die which the subject tries to turn up as a consequence of direct mental action.

TELEPATHY: Extrasensory perception of the mental activities of another person. It does not include the clairvoyant perception of objective events.

TRIAL: In ESP tests, a single attempt to identify a stimulus object. In PK tests, a single throw of the dice or other objects thrown.

the animal's meanderings and come out with the right answer, in spite of everything? Alas, though the fish's anatomy is pretty well known, there doesn't seem to be room anywhere for an integrator.

Whatever unknown or unsuspected factors may be operative, however, we may be certain that the animal's recognized senses supplement these and play an important part in the matter, throughout. Above all, it should be insisted that this entire range of phenomena lends itself very well to experimental attack. Various hitherto untried experiments suggest themselves, which would go a long way towards clearing up some of the more baffling points.

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My intention, in this last section of my address, is to insist upon the possibility that in both man and some other animals, impressions from the environment may not all be mediated through recognized organs of special sense which are sensitive to recognized modes of chemical or physical stimulation. This does not mean that I wish to remove a large and important class of phenomena from the field of natural science. There is abundant opportunity for rigidly exact investigation here, both in the case of man and fish. And I believe that it is our present duty to settle some of these highly controversial matters by experiment, instead of dogmatically denying them or complacently ignoring them.

From "Psychology and Some Things That Fishes Do"
by Prof. F. B. Sumner, formerly of Scripps
Institution of Oceanography.

Scientific Monthly, September, 1939.

ESP AND SALMON MIGRATION

In the present state of our evidence, I think that we can hardly escape the conclusion that the individual salmon commonly returns to spawn in the same river and tributary in which it passed its early life, and this even after the lapse of several years spent in the ocean, and after migration to points which may be hundreds of miles distant.

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How, then, can we resolve these directed wanderings of the salmon into a mere succession of thermotropic or chemotropic responses, when there is no constancy in the physical conditions of any part of the travel-route from month to month or year to year? I don't believe that this can be done.

I have spoken of the thermal and chemical senses in this connection, since any other known special senses of the fish may be safely left out of consideration. Many persons, particularly those without biological training, are quick to appeal to some unknown "sixth sense" to help us out of such a situation. As if most vertebrate animals, fishes included, did not have more than six senses already!

The question in this case is not so much that of discovering some additional sensory mechanism in the fish as it is of finding, or even conceiving of, some hitherto unrecognized mode of physical energy competent to act as a directive stimulus. I think that we are justified in saying that we lack any satisfactory clue to such a directive stimulus at the present time. The situation might seem to call for some method of geodetic orientation upon the earth's surface rather than mere guidance by stimuli from successively encountered features of the environment. But orientation in the earth's magnetic field would surely be a wild guess, and guidance by means of the earth's rotational forces would perhaps be an even wilder one. And what would you think of me if I should attempt to endow the poor fish with some sort of an integrating mechanism, such as our mathematical friends employ in their calculations—one which would automatically register all the components in

(Continued on inside back cover)